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NOTES

FROM THE

LEYDEN MUSEUM.

NOTES

FROM THE

LEYDEN MUSEUM

FOUNDED BY THE LATE

Prof. H. SCHLEGEL,

CONTINUED BY

Dr. F. A. JENTINK,

Director of the Museum.

VOL. VII.

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CONTENTS OF VOL. VII.

MAMMALIA.

	Page
On <i>Didelphis caudivolvula</i> Kerr and <i>Didelphis vulpecula</i> Kerr. By Dr. F. A. Jentink	21.
On some rare and interesting Mammals. By Dr. F. A. Jentink (Plate 1 and 2).	33.
A monograph of the genus <i>Cuscus</i> . By Dr. F. A. Jentink	87.
On two re-discovered Antelopes. By Dr. F. A. Jentink (Plate 9 and 10).	269.

AVES.

Zoological researches in Liberia. A list of Birds, collected by J. Büttikofer and C. F. Sala in Western Liberia, with biological observations. By J. Büttikofer ¹). (Plate 6 and 6a).	129.
A supplementary note on <i>Glareola megapoda</i> . By J. Büttikofer	256.

PISCES.

On deformities of the head in Salmonidae. By Dr Th. W. van Lidth de Jeude. (Plate 7)	259.
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INSECTA.

COLEOPTERA.

Synonymical remarks on Coleoptera. By C. Ritsema Cz.	16.
Description de quatre espèces nouvelles de Coprophages appartenant au Musée de Leyde. Par J. W. van Lansberge	17.
Description of a new species of the Nitidulid genus <i>Platynema</i> Rits. (<i>Orthogramma</i> Murray, nec Guenée). By C. Ritsema Cz.	29.
A new species of the Buprestid genus <i>Calodema</i> . Described by J. R. H. Neervoort van de Poll. (Plate 3, fig. 5)	31.
Four new species of exotic Coleoptera. Described by C. Ritsema Cz. (Plate 3, fig. 1—4)	39.
Deux espèces nouvelles de Cueurjides des îles de la Sonde. Décrites par Ant. Grouvelle. (Plate 4, fig. 1 and 2)	47.

1) Correction: p. 183, for "*Melaenornis edolioides*, syn. *Melasoma edolioides* Swains." read "*Dryoscopus leucorhynchus* Hartl. Orn. W. Afr. p. 112."

	Page
Description of a new genus of Bostrychidae. By the Rev. H. S. Gorham.	51.
Remarks on (Hymenoptera and) Coleoptera. By C. Ritsema Cz.	54.
Description d'une espèce nouvelle de Haliplides. Par M. Régimbart	55.
Deux espèces nouvelles d'Élatérides. Décrites par E. Candèze. (Plate 4, fig. 6 and 6a)	120.
Three new species of exotic Coleoptera. Described by C. Ritsema Cz. ¹⁾ (Plate 4, fig. 4 and 5)	123.
Remarks on Longicorn Coleoptera. By C. Ritsema Cz.	128.
A new species of the Coleopterous genus <i>Tritomidea</i> Motsch. Described by the Rev. H. S. Gorham.	257.
Description d'une espèce nouvelle exotique du genre <i>Necrophorus</i> Fabr. Par. Aut. Grouvelle	262.

HYMENOPTERA.

Remarks on Hymenoptera (and Coleoptera). By C. Ritsema Cz.	54.
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DIPTERA.

On exotic Diptera. By F. M. van der Wulp. Part 1 (concluded from Vol. VI, page 256)	1.
On exotic Diptera. By F. M. van der Wulp. Part 2. (Plate 5)	57.

MOLLUSCA.

<i>Neritina</i> (<i>Clithon</i>) <i>subocellata</i> v. Martens, M. S. Described by M. M. Schepman. (Plate 4, fig. 3, 3a and 3b)	49.
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VERMES.

A new Entozoon from <i>Struthio molybdophanes</i> Rehw. Described by Dr. R. Horst. (Plate 8)	263.
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1) Correction: p. 126, line 2 (from top), for "to broad entire" read "two broad entire."

Vol. VII was issued in parts in the following order:

- N^o. 1 — January 1885, Note I—XIV (page 64).
- N^o. 2 — April 1885, Note XIV (p. 65)—XIX (p. 160).
- N^o. 3 — July 1885, Note XIX (p. 161)—XXIV.
- N^o. 4 — October 1885, Note XXV.

NOTE I.
ON EXOTIC DIPTERA.

BY

F. M. van der WULP.

PART I.

(Concluded from vol. VI, page 256).

11. *Ctenophora annulosa*, n. sp.

Atra velutina; abdomine annulo basali aurantiaco; antennis, palpis, pedibus halteribusque nigris; alis fuscis, maculis sublimpides in cellularum medio. — ♀. Long. 20,5 mm.

Closely related to the two foregoing species; the thorax, however, is entirely black; on the contrary the posterior half of the first abdominal segment and the anterior half of the second one are orange. The wings are not so broad and less dark; all the cells, except the costal ones, have clear centres; neuration agreeing with that of *inunctans* and *velutina*.

A ♀ from Java (Blume).

Prionota, n. g.

(πριονοτος, serrulated).

G. Ctenophorae affinis, sed antennae in utroque sexu forte nodulosae vel serratae, in mare non ramulosae.

Notes from the Leyden Museum, Vol. VII.

In the robust stature, the shape of the head, the long flexible terminal joint of the palpi and the neuration of the wings this new genus agrees with *Ctenophora*, but it may be distinguished by the antennae, which in both sexes are strongly enlarged on one side and somewhat sawlike.

Face conically prolonged downwards and extended to a sharp point; eyes round, slightly prominent. Antennae stout, composed of thirteen joints, with exserted hairs; the two basal joints as in *Ctenophora*; the third and following ones slender at the base, and enlarged into a broad knob towards the underside, in consequence of which the antennae have a sawlike appearance; the apical joint subulate. Palpi four-jointed; the terminal joint as long as the three preceding taken together. Thorax convex; pronotum distinctly separated. Abdomen oblong, composed of eight segments; genitals of the male but little swollen. Legs stout; tibiae, at least the hind ones, with short spurs. Wings as long as the abdomen; the second posterior cell sessile.

12. *Prionota nigriceps*, n. sp.

Ferruginea opaca; capite, antennarum nodulis, palpis, abdominis segmentis ultimis (in ♂), femorum tibiisque apice nigris; tarsis fuscis; alis infuscatis. — ♂. Long. 16 mm., ♀ mare major.

Head, including the palpi, black or blackish-brown. Antennae of the ♂ at least as long as the head and thorax together; those of the ♀ hardly half as long; the two basal joints and the short stem of the following joints reddish-yellow; the broad knob of the latter black; the exserted hairs yellow. Thorax and scutellum ferruginous, opaque, with short pilosity of the same colour; pleurae darker, especially in the ♂. Abdomen of the ♂ reddish-yellow on the three first segments; the following ones and the genitals black; first segment short; second very long, with a narrow black lateral stripe; the following segments gradually decreasing in length (in the female

specimen the abdomen is broken off). Legs reddish-yellow; the tips of the femora black; tibiae infuscated towards the end; tarsi fuscous. Halteres reddish-yellow with their knob brown. Wings with a brown tinge and still darker stigma; the centre of most of the cells lighter.

A pair from Java (Kuhl).

13. *Megistocera fuscana*, Wied.

Nematorcera fuscana, Wied. Dipt. ex. I. 29; — *Megistocera fuscana*, Wied. Auss. Zweifl. I. 55. 1; Macq. Suit. à Buffon, Dipt. I. 114. 2. pl. 2, f. 15; id. Dipt. ex. Supp. 1. 18. 2. pl. 2, f. 4.

In the Leyden Museum are two specimens, one from Java (Macklot), the other from Halmaheira (Bernstein), which I consider to belong to this species, though the description of Wiedemann does not agree in all points. The colour, which he calls »gensleder-bräunlich'', in these specimens is rather pale ferruginous, the brown longitudinal stripes on the thorax, mentioned by him, are only faintly indicated.

Macquart has already remarked that Wiedemann was mistaken in considering his specimen, which had exceedingly long antennae, a female, for, in the genus *Megistocera* this is exclusively a character of the male. The two above mentioned specimens of the Leyden Museum are also males; in the one from Java the antennae are present, but the abdomen is broken off; in the one from Halmaheira the contrary is the case. It will be easily understood, that insects of such tender structure do not often reach us in good condition.

The first joint of the antennae is cylindrical, very thick and as long as the face; the second joint is short and knotty; then follows an extremely long, hairlike flagellum, the three or four first joints of which only are set off by a rather inconspicuous knot. The head and thorax have a dense and rather long pilosity. The abdomen is

proportionately very short. The wings pure hyaline, even along the costa, and more than twice as long as the abdomen; the veins and the very distinct stigma are testaceous. The neuration agrees chiefly with that of *Tipula* and *Ctenophora*; the upper basal cell is longer than the two others; the middle basal cell does not quite reach the discal cell, but is separated from it by a small pedicle; the two subcostal cells are large, the inner one somewhat triangular, the cubital cell is also broad, especially at its base; the discal cell on the contrary is very small, trapezoidal; the first posterior cell is narrow in the middle, in consequence of a sinuosity of the longitudinal veins which limit it; the axillar vein is very short ¹).

14. *Tipula umbrina*, Wied.

T. umbrina, Wied. Auss. Zweifl. I. 49. 14; v. d. Wulp, Tijdschr. v. Entom. XXIII. 158. 4; — *T. castanea*, Macq. Dipt. ex. I. 1. 54. 4; — *T. congruens*, Walk. Proc. Linn. Soc. Lond. V. 231. 8.

This species seems to be very common in the Sunda Islands for it occurs in almost every collection, containing Tipulidae, received from there. Besides the many Javanese specimens, existing in the Leyden Museum or in my possession, I have seen specimens of it from Sumatra (v. Lansberge), from Gorontalo (v. Rosenberg) and from Obi (Bernstein).

Most of the specimens, which I examined, exactly agree with the description of *T. castanea* Macq., which must be considered merely as a variety of *T. umbrina*. The antennae are just as Macquart describes them. According to him, the difference principally exists in the absence of the brown stripe on the metanotum and of the white transverse band on the wings. In fact there are only a

1) With regard to the nomenclature of the neuration see "Tijdschrift voor Entomologie" XIV. p. 97.

few specimens, which show the brown stripe of the metanotum; on the contrary the white band of the wings is always more or less distinct.

15. *Tipula serrata*, n. sp.

Testacea; thoracis dorso abdominisque segmentis ultimis, praeter genitalia, fuscis; antennis nudis, ochraceis, serratis; alis laete infuscatis, basi striga nigra. — ♂. Long. 22 mm.

Testaceous. Antennae ochraceous, as long as the head, without bristles; joint 4—11 dilated towards the under-side, which gives a serrulated appearance to the antennae; the two last joints slender. Thorax on the upper part dark bronze, which colour ends near the front margin in three indistinct longitudinal stripes; the thorax has a short pale yellow pilosity. The last segments of the abdomen are fuscous; the genitals testaceous, not very large. Legs reddish-yellow; the tips of the femora and tibiae, as well as the whole of the tarsi fuscous. Halteres brown with the stem clearer. Wings much longer than the abdomen, uniformly greyish-brown, the stigma a little darker; base of the subcostal vein thick and blackish; discal cell pentagonal; furcated cell shortly pedunculate.

A ♂ from Serahan (Felder).

A ♀ from Sumatra (v. Lansberge) seems to belong to the same species, but is in too bad condition for certain identification.

16. *Tipula pilosula*, n. sp.

Testacea; thorace pilosulo; antennis simplicibus, nudis, cylindricis; alis cinereis. — ♂. Long. 16 mm.

Testaceous. Head with the two basal joints of the antennae bright ochraceous; the following joints pale brown; the antennae are simple, hardly as long as the head and without bristles. Palpi pale brown. Thorax with ill-defined brown longitudinal bands, the whole surface with rather

long dense projecting, pale yellow hairs. Abdomen somewhat darkened on the last segments; genitals not very large, with a pair of short, pointed nipples on the upper side. Legs very long and slender, uniformly pale brown. Halteres yellow with the knob black. Wings with a cinereous tinge; the stigma pale brown.

A ♂ from Ambarawa in Java (Ludeking).

17. *Tipula leucopyga*, n. sp.

Dilute testacea; thorace dorso vittis latis subcohaerentibus fuscis; abdomine vitta laterali segmentisque 5, 6 et 7 supra nigricantibus; segmento ultimo pallido; antennis subsimpli-cibus, articulis duobus primis subrupis, reliquis cinereis basi nigra; alis laete cinereis, cellula costali et stigmate testaceis. — Long. 11,5 mm. (♂), 13 mm. (♀).

This species resembles our *T. oleracea*, but is much smaller; the costa of the wings is less dark and not accompanied by a light border.

Head testaceous; on the vertex a brown spot; face but little prolonged. Antennae a little longer than the head; the two basal joints subrufous; the following joints cinereous, oblong, with an insignificant swelling at the base and the tip; their base black with a pair of long exserted hairs. Palpi testaceous, brown towards the end. Thorax pale yellowish-brown, on the upper side with three broad, almost wholly connected, brownish longitudinal bands; the outward ones shortened in front; the middle one divided by a dark longitudinal line. Abdomen of the male pale testaceous; a lateral band and the upper side of the 5th, 6th and 7th segments blackish; the last segment yellowish-white, on the upper side terminated by a pair of small black hooks; abdomen of the female generally a little darker; the last segment pale rufous; ovipositor shining ferruginous. Legs pale brown; the tips of the femora and tibiae, as well as the whole of the tarsi fuscous. Halteres fuscous, with the base of the stem pale

yellow. Wings longer than the abdomen, cinereous; the costal cell and the stigma testaceous; discal cell pentagonal; furcated cell about thrice as long as its stalk; the third posterior cell narrow-, the fourth one on the contrary enlarged at the end.

A single but well preserved pair from Ambarawa in Java (Ludeking).

18. *Tipula tenuis*, n. sp.

Cinerea; abdomine utrinque vitta laterali interrupta nigra; pleuris et ventre pallidis; antennis gracilibus, articulis duobus primis luteis, reliquis nigris; palpis fuscis; pedibus tenuibus testaceis; alis subhyalinis, stigmatate testaceo. — ♀. Long. 13,5 mm.

Antennae slender; the two basal joints pale yellow; the third and following joints black, cylindrical, bare (the last joints are absent in both specimens). Head testaceous; orbits of the eyes whitish; palpi fuscous. Thorax on the upper side cinereous with hardly any indication of longitudinal stripes; pleurae light grey. Abdomen testaceous, with a black lateral stripe which is interrupted and bordered with pale yellow; underside and ovipositor yellowish; the tip of the latter chestnut-coloured, shining. Legs very long and slender, uniformly testaceous; the tarsi infuscated. Halteres fuscous. Wings longer than the abdomen, hyaline with hardly any cinereous tinge and a rather clearly defined testaceous stigma, which does not quite reach the margin of the wing; the neuration calls to mind that of the genus *Megistocera*; the two submarginal cells are large, the inner one triangular; discal cell pentagonal; furcated cell shortly pedunculated; axillar vein unusually short.

Two female specimens from Surinam, presented to the Museum by Mr. Horst.

19. *Pachyrhina maderensis*, n. sp.

Flava; thorace vittis tribus fuscis, media gemina, lateribus antice rectis; pleuris immaculatis; metanoto maculis tribus fuscis; abdominis segmentorum singulorum margine postico nigro; antennarum flagello nigro, articulis subcylindricis; alis flavo-cinereis, stigmatate testaceo. — ♂. Long. 9 mm.

Reddish-yellow. Face shining; a point on the vertex black. Antennae as long as the head and thorax together; the two basal joints yellow; the following joints blackish, cylindrical, at the base scarcely swollen and with a short hair. Palpi yellowish-brown. The bands of the thorax brown, the middle one before the suture divided in two; the outward ones not laterally curved in front; metanotum with three brown spots close together; pleurae unspotted. The abdominal segments with a black hind border, which is broader in the middle; the club-shaped anus reddish-yellow. Coxae and femora yellow; the latter with a dark brown tip; tibiae and tarsi yellowish-brown. Halteres yellow with a dark knob. Wings with a greyish-yellow tinge and the stigma testaceous; discal cell quadrangular; furcated cell sessile.

A ♂ from Madera (Kuhl).

20. *Pachyrhina nigro-annulata*, n. sp.

Fulva; pronoto, thoracis disco, abdomine fasciis segmentisque ultimis iotis nigris; antennis dilute fuscis; pedibus flavis, femorum et tibiaram apice tarsisque fuscis; alis brunnescentibus, stigmatate fusco. — Long. 15,5 mm. (♂), 18 mm. (♀).

General habit like our European *P. crocata*. Orange-yellow. Antennae of the ♂ as long as head and thorax together; the first joint yellow, the following ones testaceous or pale brown; joint 4, 5 and 6 somewhat notched on the underside, fuscous on the base; antennae of the ♀ shorter, the joints not notched. Front a little prominent;

face but little prolonged, with a tuft of black hairs on the nose; palpi yellow, darker towards the end. Collar black; on the thorax three broad, shining black, longitudinal bands, which are connected in the middle; the middle band not crossing the suture; the outward ones shortened in front and prolonged behind as far as the scutellum, which is also black; pleurae with a broad, oblique, black band, reaching to the middle coxae; metanotum black below. Abdomen slender at the base, a little enlarged towards the end; hindborder of the five first segments and the following segments entirely black; the ♀ with the ovipositor as well as the small foregoing segment ferruginous. Legs yellow; the tip of the femora and tibiae, as well as the tarsi dark brown. Halteres yellow, the tip of the knob blackish. Wings with a brownish tinge; veins black; stigma fuscous; furcated cell sessile (in one of the female specimens shortly pedunculate).

A male and two female specimens from Morotai (Bernstein).

This species seems to be related to *P. laconica* and *ortiva* Ost. Sack. (Berl. ent. Zeitschr. XXVI. p. 92 and 93); it differs however in having the black markings less extended, especially on the abdomen, and from *laconica* by the yellow metanotum, which has only a black spot on the underside, and by the yellow coxae; from *ortiva* in having the black spot on the front absent.

21. *Pachyrhina quadrivittata*, n. sp.

Flava; thorace vittis quatuor, metanoto macula quadrata et abdomine maculis dorsalibus trigonis nigris; antennarum flagello fusco, articulis reniformibus; alis cinerascentibus, versus apicem obscurioribus; stigmatibus dilute fusco. — ♂. Long. 12,5 mm.

Reddish-yellow. Vertex with a black trigonal spot, which is prolonged into a point in front. Antennae as long as head and thorax together; the two basal joints yellow; the following

joints fuscous, thickened at the base and provided with rather long hairs, narrow in the middle, then thickened again. Rostrum and palpi yellow. Thorax with four black longitudinal bands, which are united in front by a black border; the two lateral bands surround the shoulderknots; scutellum with a black longitudinal band; metanotum with a large quadrangular black spot; pleurae unspotted. The black markings of the abdomen consist of a transverse band on the first segment, a round spot on the second, the third and following segments with trigonal spots, which have the tips directed forwards; the last segments are almost entirely black; the genitals reddish-yellow, on the upper part with a pair of hooks, which are curved towards each other. Legs yellow; tips of the femora black; tibiae and tarsi testaceous. Halteres yellow; the knob, except its tip, blackish. Wings yellowish-cinereous, darker towards the end; stigma pale brown, preceded by a smaller spot of the same colour above the point where the radial vein issues from the cubcostal vein; furcated cell very shortly pedunculate; discal cell quadrangular.

A ♂ from Java (Kuhl).

22. *Pachyrhina triplasia*, n. sp.

Flava; thorace vittis tribus latis nigris, lateribus antice recurritis; pleuris immaculatis; abdomine vittis tribus nigris, dorsali latiori, interrupta; antennarum flagello nigro, verticillato, articulis reniformibus; alis cinerascensibus, stigmatibus dilute fusco. — Long. 10 mm. (♂), 13 mm. (♀).

Reddish-yellow. A spot on the nose and another behind each of the eyes, black; the former in the ♀ indistinct. Antennae of the ♂ as long as head and thorax together, those of the ♀ shorter; the two basal joints yellow; the following ones black, dilated at the base and at the end, with exserted hairs. Palpi testaceous, the terminal joint black. Thorax with three broad, black, longitudinal bands, the middle one enlarged in front and reaching the col-

lar; the lateral ones bent outwards in front; pleurae unspotted; metanotum with some indistinct brown spots. Abdomen with three black longitudinal stripes, that on the back broader, but interrupted at the incisions, male genitals provided with knots, pilose, chestnut-coloured, with a pair of pointed nipples; ovipositor of the female shining rufous. Legs testaceous; femora darker towards the end. Halteres yellow; the knob partly blackish. Wings grey; the stigma pale brown.

A single pair from Ambarawa in Java (Ludeking).

23. *Eriocera acrostacta*, Wied.

Limnobia acrostacta, Wied. Dipt. ex. I. 14. 4; id. Auss. Zweifl. I. 26. 4; Macq. Dipt. ex. Supp. 1. 18. 9; pl. 2, f. 6; — *Cylindrotoma acrostacta*, Macq. Dipt. ex. I. 168. 2 pl. 9, f. 7; id. Supp. 3. 7; — *Oligoneura javensis*, Dol. Nat. Tijdschr. v. Ned. Ind. XIV. 387. pl. 7, f. 3.

Besides the specimens which agree in all respects with the description given by Wiedemann, I find in the Leyden Museum others, which differ in some minor points and therefore must be considered as mere varieties.

A male specimen from Ambarawa in Java (Ludeking) has the thorax entirely black; the stripes of the abdomen likewise are black, that of the upper side is enlarged at the hind margin of each segment, and the last segments are totally black. This is the variety mentioned by Macquart in the 3rd supplement of his „Diptères exotiques”.

In another male specimen, also from Java (Müller), the black colour of the abdomen is still more extended, so that there remain only two yellow lateral stripes.

In both these varieties the legs are not darker than in normal specimens.

24. *Eriocera albipunctata*, v. d. Wulp.

Tijdschr. v. Entom. XXIII. 158. 6. pl. 10, f. 3 and 4.

My description (*l. c.*) only refers to the ♀. In the Leyden Museum are a few male specimens from Java (Müller and Blume), which seem to belong to this species, though in most of them the white tip on the wings is absent, so that the name, which I have given to the species, appears to be derived from an inconstant character. In the specimens referred to the abdomen is bright reddish-yellow, with the incisions and narrow lateral stripe black; the hind margin of the fifth segment is black, pointed towards the front; the sixth segment is black, on both sides with a pair of yellow spots close to each other; the last segment and the genitals are entirely black. The wings are less dark and more brownish-yellow than those of the female described; hence the white spot on their tip, if it is present, is not so distinct.

25. *Eriocera Hilpa*, Walk.

Pteroscopus Hilpa, Walk. List Dipt. Brit. Mus. I. 79.

The description may be applied to a female specimen from Ningpo in China (Felder), but as this description is very short and incomplete, I here give a more ample one.

♀. Long. 17 mm. — Dull black, including the palpi and halteres; abdomen with a little lustre; the front margin of the first segments metallic or somewhat silvery. Basal joints of the antennae black; the third and following joints obscurely fulvous, with a short fuscous pilosity. Thorax covered with short hairs; ovipositor ferruginous, its long and pointed end shining. Legs piceous. Wings dark brown, the hind margin beneath the anal vein greyish; beyond the middle, but before the discal cell, is a large white spot, which is limited below by the postical vein and above is angularly bent towards the apex a little before the small cross-vein, which unites the subcostal vein with the upperbranch of the radial vein; almost above this cross-vein is a small white spot; there are also greyish spots in some of the cells; the wings have but four posterior cells.

Another specimen received from the same source, perhaps the ♂, — but of which the abdomen is broken off, — has only the above mentioned white spot beyond the middle.

E. leucostola Walk. (Proc. Linn. Soc. Lond. I. 6. 5), from Singapore, seems to be closely related to this species but differs in having a white tip to the wings. As we have seen in the foregoing species, this character is not constant. *E. leucostola* may perhaps be the same species as *E. Hilpa*.

26. *Eriocera ferruginosa*, n. sp.

Ferruginea; capite cinereo; antennarum articulis duobus basalibus, abdominisque segmentis ultimis fuscis; femorum tibiatarumque apice et tarsis nigris; alarum costa flava; cellulis posterioribus quinque. — ♀. Long. 21 mm.

Ferruginous. Head cinereous. Antennae thrice as long as the head, covered with short hairs, composed of six joints; the two basal ones greyish-brown; the others reddish-yellow. Palpi blackish. Thorax on the upper side with indistinct longitudinal stripes. Abdomen long and slender; the segments 1—4 with a thin black lateral stripe; the following segments and the sharply pointed ovipositor dark brown. Legs reddish-yellow; the tip of the femora and tibiae, as well as the whole of the tarsi black. Halteres yellowish with the knob blackish. Wings yellowish-grey, along the costa reddish-yellow; the cross-vein, connecting the subcostal vein with the upper branch of the radial vein, is placed near the root of this branch; there are five posterior cells; the second (the furcated cell) is a little longer than its stem.

Some female specimens from Java (Kuhl).

27. *Poecilostola pallens*, n. sp.

Pallide ochracea; capite cinereo; thorace rufescente, vittis

Notes from the Leyden Museum, Vol. VII.

tribus fuscis; alis flavescentibus, crebre fusco-punctulatis. — ♂. Long. 12 mm.

Head cinereous; front with a dark longitudinal line; antennae twice as long as the head; the two basal joints reddish-yellow, the flagellum blackish, composed of globular joints, gradually decreasing in extent towards the end. Thorax, scutellum and metanotum pale ferruginous; on the thorax three widely separated, fuscous stripes; the middle one slender before the suture; the outward ones broader and interrupted. Abdomen flat, pale ochraceous; the lateral suture brown; the genitals small. Legs (judging from the fragments present) and halteres ochraceous. Wings yellowish-grey; the root and costa reddish-yellow; all the cells with numerous darkgrey points, which are confluent, forming a grey stripe in the cubital cell, in the two upper basal cells and in the first posterior cell; in the costal cell these points are darker and more distinctly limited.

A ♂ from Java (Kuhl) with the legs damaged.

This species must be closely related to *Limnobia substituta* Walk. (List Dipt. Brit. Mus. I. 39), which also belongs to the genus *Poecilostola*; it differs, however, by the distinctly separated stripes on the thorax.

Fam. *Rhyphidae*.

28. *Rhyphus maculipennis*, n. sp.

Thorace flavo, vittis tribus nigris; antennis flavis, fusco-annulatis; pedibus flavis, tibiarum apice et tarsi, praeter basin, nigro-fuscis; femoribus posterioribus annulo medio et apice nigris; alis nebulosis, fusco-maculatis. — ♂. Long. 8 mm.

Eyes connected in front, with very small facets; front small, trigonal, cinereous; face of the same colour. Antennae yellow; the third, fourth and fifth joints with fuscous tips (the following joints broken off). Palpi

blackish. Thorax yellow, with three broad, black, longitudinal bands on the upper side, the outer ones shortened and somewhat narrower in front; pleurae with two oblique fuscous bands; scutellum brownish-red; metanotum greyish-yellow, shining. Abdomen too much damaged for description. Legs reddish-yellow; the tips of the tibiae and of the two basal joints of the tarsi fuscous; the following joints of the tarsi entirely of this colour; the hind legs are longer and stouter than the others; the dark markings are more extended and black; the femora have a broad fuscous ring in the middle and a black tip; the tibiae and first joint of the tarsi are fringed on the outside with a dense pilosity. Wings shorter and broader than in our European species, clouded and with about four fuscous spots: a small quadrate one at the root of the radial vein and three larger ones at the costa, the first at the end of the auxiliary vein, a second between the end of the subcostal and radial veins, the third, which is the largest, at the apex of the wing.

A ♂ from Ardjoeno in Java (Hekmeyer).

Although this unique specimen is somewhat damaged and therefore the description incomplete, I do not hesitate to publish it, because up to the present time no species of *Rhyphus* has been described from the Sunda Islands; moreover, this species will easily be recognized by the markings of the wings.

NOTE II.

SYNONYMICAL REMARKS ON COLEOPTERA.

BY

C. RITSEMA Cz.

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1. *Parastasia Zoraidae* Gestro, Ann. Mus. Civ. di Genova. VIII (1876). p. 514 = *Coelidia marginata* Boisd., Voyage de l'Astrolabe. Entom. pl. 6, fig. 17 et Faune Entom. de l'Océanie. II (1835). p. 187.
 2. *Parastasia degenerata* Voll., Tijdschr. v. Entom. VII (1864). p. 147 = *Parastasia puncticollis* Deyr. in litt. = *Parastasia rugosicollis* Blanch., Cat. Coll. Ent. Mus. Paris (1850). p. 217.
 3. *Heterorrhina infuscata* Voll., Tijdschr. v. Entom. VII (1864). p. 151 = *Heterorrhina africana* Drury, Illustr. Exot. Ins. II. p. 57. *Var.*
 4. *Gymnetis hamata* Fauvel, Bull. Soc. Linn. Normand. V (1861). p. 305 ¹⁾ = *Gymnetis liturata* Oliv., Entomologie. I. n^o. 6, p. 86; pl. 12, fig. 121.
 5. *Euryomia Sieboldii* Voll., Tijdschr. v. Entom. VII (1864). p. 158 = *Glycyphana fulvistemma* Motsch., Schrenck's Reisen im Amur-Lande. II, 2 (1860). p. 135.
 6. *Cyphogastra splendens* C. O. Waterh., Proc. Zool. Soc. London. 1884. p. 215; pl. 16, fig. 2 = *Cyphogastra ventricosa* Cast. & Gory (nec Fabr.), Mon. Buprest. I. *Chrysodema*, p. 20; pl. 5, fig. 27 = *Cyphogastra javanica* E. Saund., Cat. Buprest. syn. et syst. (1871). p. 17.
- N.B. This species is not from Java, but from the Aru Islands (Leyden Museum), Key Islands (coll. v. Lansberge) and Timor-Laut Islands (British Museum).

Leyden Museum, October 1884.

1) The type specimen (from Cayenne) is in the Leyden Museum.

NOTE III.

DESCRIPTION DE QUATRE ESPÈCES
NOUVELLES DE COPROPHAGES APPARTENANT
AU MUSÉE DE LEYDE.

PAR

J. W. van LANSBERGE.1. *Onthophagus pacificus*, n. sp.

Ovatus, convexus, nitidus, glaber, niger, pedibus piceis, capite bicarinato, thorace convexo, subtilissime punctulato, elytris sat profunde striatis, interstitiis crebre punctulatis. Fem. thorace minus convexo. — Long. 7 m.m.

De forme ovulaire, un peu parallèle, brillant, lisse, noir, les pattes brunâtres, la massue des antennes grisâtre, le dessous orné de poils gris.

Tête courte, large, munie de deux carènes bien prononcées, finement granulée, le chaperon largement arrondi, rebordé.

Prothorax large, très convexe, surtout antérieurement, couvert d'une ponctuation très fine, ses bords latéraux arrondis, sa base arrondie, s'avancant un peu au milieu.

Elytres de la largeur du prothorax, distinctement striées, les stries latérales plus profondes, les intervalles finement et densément ponctués.

Pygidium ponctué.

Pattes courtes, robustes, les tarses courts.

La femelle diffère seulement du mâle par son prothorax qui est beaucoup moins convexe.

Java (Blume). Se trouve aussi dans la presqu'île de Malacca (coll. de l'auteur).

2. *Onthophagus Deliensis*, n. sp.

Breviter ovatus, convexus, nitidus, setis brevissimis obtectus, nigro-viridis, elytris nigris, basi et apice rufo-maculatis, capite inerme, thorace convexo, punctato, elytris striatis fortiterque punctatis, pedibus anticis curvatis. ♂. — Long. 4 m.m.

De forme brièvement ovulaire, brillant, couvert de petits poils érigés, d'un noir verdâtre, les élytres noires avec la base et l'extrémité rouges, les pattes brunâtres, les cuisses antérieures rougeâtres.

Tête subogivale, finement ponctuée, n'ayant aucune trace de carènes, la séparation du chaperon même à peine indiquée, le vertex rehaussé plan.

Prothorax très convexe, plus large en avant qu'en arrière, ses bords latéraux arrondis avec les angles postérieurs infléchis, peu visibles, distinctement ponctué.

Elytres un peu plus larges que le prothorax, déprimées, fortement striées, les intervalles saillants, eutamés par des points transversaux, la partie scutellaire enfoncée.

Pygidium irrégulièrement ponctué.

Pattes robustes, les quatre tibias postérieurs légèrement arqués, les antérieurs allongés, grêles, fortement recourbés, les dents très aigues. Metatarse allongé, légèrement arqué.

Un seul exemplaire mâle envoyé de Deli (Sumatra orient.) par Mr. Schagen van Leeuwen.

Parmi les espèces à élytres noires, ornées de taches rouges, celle-ci est facilement reconnaissable à sa tête complètement inerme et ses pattes antérieures courbées. Il est cependant probable que dans la femelle elles seront droites.

3. *Onthophagus Forsteni*, n. sp.

Sat parallelus, parum nitidus, breviter setosus, piceus, capite thoraceque aenescentibus, hoc rufo-marginato, pygidio

femoribusque rufis, nigro-maculatis, capite lamina occipitali in spinam unicam exeunte munito, thorace crebre punctulato, elytris leviter striatis, subtiliter punctulatis. ♂. — Long. 7 m.m.

De forme assez parallèle, mat, couvert de petits poils érigés, brun noirâtre, la tête et le prothorax bronzés, celui-ci bordé latéralement de fauve, le pygidium et les cuisses fauves, tachetés de noir, les antennes et la bouche jaunes.

Tête subogivale, à chaperon un peu relevé au milieu, le vertex surmonté d'une lame relevée, pointue, la ponctuation à peine perceptible.

Prothorax un peu rétus et impressionné au milieu antérieurement, en face de la lame occipitale, densément ponctué, sa base un peu anguleuse au milieu, ses bords latéraux arrondis, à angles postérieurs peu perceptibles, les antérieurs presque droits.

Elytres de la largeur du prothorax, planes, munies de stries lisses, peu profondes, les intervalles densément et finement ponctués.

Pygidium fortement ponctué.

Pattes médiocrement robustes, les tibias antérieurs un peu recourbés, les tarses grêles à métatarse assez allongé.

Un seul exemplaire trouvé dans l'île de Celebes par le Dr. Forsten.

4. *Phalops rufosignatus*, n. sp.

Dans ma monographie du genre *Phalops* (Stett. Ent. Zeit. 1883, p. 168) j'ai fait mention d'une espèce, déjà signalée par Mr. de Harold, que nous n'avions ni l'un ni l'autre osé décrire n'en connaissant que la femelle. Depuis lors j'ai trouvé le mâle dans la collection du musée de Leyde, ce qui me met à même d'en donner ici la description :

Nigro-aeneus, capite thoraceque interdum virescentibus, elytris rufomaculatis, supra opacus, granulatus, subtus niger, nitidus. — Long. 8—10 m.m.

Mas. Clypeo acuminato, apice reflexo, vertice lamina fissa,

utrinque in spiuam recurvam exeunte, instructo, tarsi posterioribus latissimis.

Fem. Clypeo breviori, haud producto, apice bidentato, a fronte carina elevata separato, hac carinula brevi ornata, vertice lamina brevissima, medio sinuata, instructo, tarsi angustioribus.

Appartenant à la division qui n'a pas de fossette sur le metathorax. D'un bronzé noirâtre, tirant parfois sur le vert sur la tête et le prothorax, le dessous et les pattes d'un noir brillant, les élytres tachetées de roux.

Mâle. Tête ogivale, à chaperon acuminé, fortement relevé au milieu en une dent arrondie, ciliée en dedans, le vertex muni d'une lame bifide dont les pointes sont lisses, recourbées, le reste de la tête couvert d'une granulation en forme d'écaillés, les joues non saillantes.

Prothorax convexe, densément granulé et recouvert de petits poils gris, beaucoup plus large que long, excavé en avant, subsilloné longitudinalement, ses bords latéraux arrondis.

Elytres planes, de la largeur du prothorax à la base, faiblement granulées et obsolètement striées, la huitième strie n'atteignant pas l'épaule, l'extrémité couverte de petites soies grises.

Pygidium mat, ridé, infléchi en dessous.

Abdomen très court. Tibias antérieurs allongés, recourbés, les postérieurs évasés au bout, leurs tarsi très larges, densément ciliés.

Femelle. Tête semicirculaire, à chaperon court, bidenté au milieu, séparé du front par une assez forte carène, celui-ci muni d'une petite carène très courte, le vertex se terminant d'une lame rudimentaire, sinuée au milieu. Prothorax moins convexe, non excavé en avant. Pygidium non infléchi. Tibias antérieurs courts, les tarsi postérieurs plus étroits, moins densément ciliés.

Cette espèce, qui se trouve dans l'Afrique méridionale, est voisine du *Ph. Wittei* Har., dont elle diffère principalement par la lame céphalique non quadriépineuse. La dent du chaperon est moins pointue, plus nettement séparée.

Brummen, Octobre 1884.

NOTE IV.

ON DIDELPHIS CAUDIVOLVULA KERR AND
DIDELPHIS VULPECULA KERR.

BY

Dr. F. A. JENTINK.

Nov. 1884.

Some months ago I was happy enough to procure for our library the rare *Animal Kingdom* written by Kerr. This author described clearly two Phalangers under the names *New-Holland Opossum* and *Vulpine Opossum*: these descriptions have been overlooked by all the naturalists who have studied the Phalanger-group.

As the specimens of these two species are greatly varying in color, and these varieties have been described as species, I will try to give a synonymy as complete as possible and to describe in short terms the individuals in our collection in order to give the reader an impression of the variation in color of the species in question.

The species quoted belong to two distinct genera, characterized as follows:

Pseudochirus: Phalangers with the two inner toes of the fore foot separated from and partially opposable to, the other three: the tail clothed, excepting at the apex beneath, with short adpressed hairs. The ears short and rounded (Waterhouse, *Marsupiata*. I. p. 297).

Trichosurus: Tail densely clothed with fur, with the exception of a part of the under surface, commencing at

the point, and more or less extended towards the root of the tail: ears distinct, usually long: fore feet normal (i. e. with no marked separation of the two inner from the three outer toes). (Waterhouse, Marsupiata. I. p. 283).

Pseudochirus caudivolvulus.

1792. *Didelphis caudivolvula* Kerr. The animal Kingdom. p. 196. (New-Holland Opossum).
 1817. *Phalangista Cookii* Desmarest. Nouv. Dict. d'Hist. natur. XXV. p. 476.
 1837. *Phalangista viverrina* Ogilby. P. Z. S. L. p. 131.
 1838. *Phalangista Banksii* Gray. Ann. and Mag. Nat. Hist. p. 107.
 1843. *Phalangista (Trichurus) bougainvillei* Wagner. Schreber's Säugethiere. Suppl. Bd. III. p. 82.
 1846. *Phalangista (Pseudochirus) canescens* Waterhouse. Natural History of the Mammalia. Vol. I. p. 305.
 1863. *Pseudochirus lanuginosus*. Gould. Mammals of Australia.

Kerr described the species as follows: »Inhabits New-Holland, near Endeavour-river. The head and body are about thirteen inches long, being covered on the upper part and the sides with long, soft, glossy hairs, of a dark cinereous colour at the roots, and rusty brown at the ends; the tail is taper and of the same length with the head and body; two-thirds of its length is covered with short brown hair, the extremity being white, and naked underneath; the paws are furnished with thumbs having flat nails, and the toes have short claws: This species lodges among the long grass, but is little known. The tail is taper, hairy and prehensile at the end”.

Now I proceed to register the specimens of this species in the Leyden Museum, adding short diagnoses.

1. Adult male. Australia, Clarence river. From Strange's voyage. Rusty colored, mixed with black on the back; underparts bright rusty, ears behind similarly colored.

2. Nearly fullgrown male. Australia. Frank, 1845. Like

N^o. 1, but upperparts of head and tail blackish, back grizzled and underparts of body brighter.

3. Nearly fullgrown male. Australia. Upperparts sooty-grey; head above, outside of legs and tail light rusty; ears behind, underparts of head and of body and inside of legs pure white.

4. Nearly fullgrown male. Australia. Frank, 1845. Head above, back, sides of body, upperhalf of legs and tail dark mouse grey; lower half of legs externally and a circle round the eyes light rusty; ears behind, underparts of body and of head and inside of legs pure white.

5. Female, mother of N^{os}. 6 and 7. Australia, 1870. Colored like N^o. 4.

6 and 7. Young specimens. Upperparts generally darker than in N^o. 5, outside of legs lighter. Circle round the eyes dark rusty. For the rest like the mother.

8. Young individual. Australia. Colored like the former young specimens.

9. Adult female, described by Temminck (Mammalogie. I. p. 7). According to the named author this specimen is one from Cook's voyage. Now I find that in Cook's account there is only question of two individuals, viz: a female from Endeavour river (1770) and a male from Van Diemensland (1777). Temminck says that the *female*-specimen in the Leyden Museum is from van Diemensland and from Cook's voyage, meanwhile Cook's *male*-specimen from Van Diemensland was »the only animal of the Quadruped kind they got". My conclusion therefore is that Temminck's specimen either is from Endeavour river or is not one of the two specimens of Cook's voyage. It is colored like N^o. 4, except the circle round the eyes which is darker.

10. Adult female. Van Diemensland. One of the specimens described by Ogilby in 1837 s. n. *Phalangista viverrina*. Head above, back and sides of body, tail and outside of legs dark ashy brown; ears behind, underparts of head and body and partially the inside of legs pure white.

11. Adult male. Van Diemensland. Less dark colored than N^o. 10.

12. Not fullgrown female. Van Diemensland. Frank, 1845. Colored like N^o. 11, but legs and circle round the eyes browner.

13. Adult male. Van Diemensland. Presented by the Sydney-Museum, 1881. Colored like N^o. 10, but underparts of head and body and inside of legs greyish white, the base of the hairs being of a slate color.

There are seven skulls of this species in our Museum.

Since I wrote my paper »on the species of the Phalangergen-genus *Pseudochirus*» (Notes from the Leyden Museum, 1884, p. 108) Mr. Collett published (Proc. Zool. Soc. London, 1884, p. 381) a paper »on some apparently new Marsupials from Queensland, collected by Dr. Lumholtz.» Mr. Collett describes three new species of the *Phalangista*-group, one belonging tho the genus *Pseudochirus*, *Ps. Archeri*, another being, according to the author, a true *Phalangista*, *Ph. Herbertensis*, meanwhile the third should be the type of the new genus *Hemibelideus*, *H. lemuroides*. Notwithstanding the fine figures of the animals and of their skulls it is very difficult to get a good idea of the species, as the descriptions are somewhat confuse and not always agree with the figures. As to the measurements the author always gives the length of the body (with or without the head?). *Ph. Archeri* belongs to the *Pseudochirus*-genus according to Mr. Collett, but either in the figure nor in the description I can find any reason to believe that the character of *Pseudochirus* (the two inner toes of the fore foot separated from and partially opposable to, the other three) is really present. The female of *Ph. Herbertensis* shows in the figure this peculiarity and, if this figure is correctly drawn, *Ph. Herbertensis* too may belong to the *Pseudochirus*-genus and differs still less from *Ph. viverrina* Ogilby (*Pseudochirus caudivolvulus*) than Mr. Collett believes: in the description of *Ph. Herbertensis* he does not mention this peculiarity of the fore feet; and

although he pays attention to »the naked line on lower surface very long, about two thirds of the length of the tail”, this line occupies in the figure of the male not about two thirds but about five sixth of that length. If the figure of *Ph. lemuroides* is correct than I believe that this species belongs like the former to the *Pseudochirus*-group, as the fore-feet demonstrate very clearly, and which has been overlooked in the description, meanwhile Mr. Collett compares his new genus with *Trichosurus* (having the fore-feet normal). In favour of his new species it is to hope that Mr. Collett will give more accurate accounts about them. The specific-name *lemuroides* is very unluckly chosen as we have already a *Didelphis (Trichosurus) lemurina* Shaw.

NB. As to *Dendrolagus Lumholtzi* Collett, I should like to know what difference can be found between this species and *Dendrolagus inustus*, besides some difference in the coloring of the body, which seems to be of a much paler hue in Collett's specimens. The author states that »skull and dentition seem not to differ in any essential way from that of the Papuan *Dendrolagi*”: but as there are differences in the form of the skulls of the species of the Papuan *Dendrolagi*, quaeritur: with the skull of what Papuan species did he compare his *Dendrolagus* - skulls?

Trichosurus vulpecula.

1792. *Didelphis vulpecula* Kerr. The animal Kingdom p. 198.
 1800. *Didelphis lemurina* Shaw. General Zoology. Vol. I. Part 2. p. 487, plate 10. — *Didelphis vulpina* Shaw. l. c. p. 503.
 1830—31. *Phalangista fuliginosa* Ogilby. P. Z. S. L. p. 135. — *Phalangista xanthopus* Ogilby. l. c. p. 135.
 1835. *Phalangista canina* Ogilby. P. Z. S. L. p. 191.
 1841. *Phalangista cuvieri* (Gray) Waterhouse, in Naturalist's Library; Marsupiat. p. 268.
 1843. *Phalangista (Trichurus) felina* Wagner. Schreber's

Notes from the Leyden Museum, Vol. VII.

Säugethiere. Suppl. Bd. III. p. 76. — *Phalangista* (*Trichurus*) *melanura* Wagner. l. c. p. 81.

Kerr described this species in the following terms: »The tail is long, thick and hairy: for three quarters of its length it is black, and the origin is of a greyish colour, like the body. Inhabits New South Wales. — The head and body measure twenty-six inches, and the tail fifteen; the legs are short and of an equal length; the foot is long, and rests in walking as far as the heel; each foot has five toes, all armed with sharp crooked claws, except the thumb, or great toe, on each hind foot, which is placed high up on the foot, and has no claws; the head is long, with a pointed muzzle, which is garnished with ten or twelve very long black whiskers, which stand backwards, and are longer than the head; the ears are long, erect, and pointed; the upper jaw has four fore-teeth, and the lower two, which point forwards, both being like those of the Kanguru; on each side, in the upper jaw, are two small tusks, but none below; there are four grinders on each side in both jaws. The whole upper parts of the body, and first quarter of the tail, are of a grisly colour, proceeding from a mixture of dusky and white hairs; with a reddish-yellow tinge, chiefly on the head and shoulders; the rest of the tail is black; all the underparts of the body are of a tawny buff, which is deepest on the throat, where the bottom of the hairs is rusty brown”.

Phalangista xanthopus Ogilby has the tip of the tail white, but this alone is not enough to create a new species, moreover Ogilby says »that in all other respects it is most closely allied to the *Phal. vulpina*.” One of our individuals has the tip of the tail white (vide infra N^o. 3).

Phalangista canina Ogilby has shorter ears according to that author, but I find in Gray’s List of the Specimens of Mammalia of the British Museum, 1843, p. 85, that the specimen described by Ogilby has the ears *injured*. The other differences between *Ph. canina* and *Ph. vulpina*

summed up by Ogilby are merely differences in color and have here no specific value (vide infra N^o. 1).

For the rest I refer to what I said in my paper (Notes from the Leyden Museum, 1884. p. 108).

Our specimens present the following variations in color:

1. Adult female. Australia. Above greyish black tinged with coffee-brown, end of tail black; underparts white, each hair greyish brown at its base; ear-patch coffee-brown. This specimen was labeled *Phalangista canina* Ogilby and indeed its ears are conspicuous short; a nearer inspection however shows that the ears are *injured*. The skull and teeth present no differences with the same parts in the other specimens.

2. Adult male. Australia, neighborhood of Melbourne. Zoological garden at Rotterdam, February 1881. Above greyish black, end of tail black; underparts and ear-patch reddish yellow; a rusty brown mark on the chest.

3. Adult female. Australia, Swan-river. Verreaux. Labeled *Phalangista xanthopus* Ogilby. Colored like the former, but underparts white like N^o. 1, ear-patch very inconspicuous, apex of tail pure white.

4. Adult male. Australia. Frank, 1844. Labeled *Phalangista felina* Wagner. Upperparts rusty red: hindparts of back with blackish, end of tail black; underparts yellowish white, each hair rusty at its base; on the chest an elongate rusty brown mark; ear-patch very inconspicuous. Skull and dentition entirely like the other skulls.

5. Adult female. Australia, Swan-river. Verreaux. Colored like N^o. 1, but less dark. Ear-patch white and a rusty brown stripe on the chest.

25. Fullgrown male. Australia. Colonial Museum, Haarlem, 1875. Upperparts greyish rusty; end of tail rusty black; underparts orange brown; a rusty brown stripe on the chest; ear-patch yellow brown; feet yellow brown.

6. Nearly fullgrown male. West-Australia. Labeled *Phalangista felina* Wagner. Colored like N^o. 4; end of tail dark reddish black, ear-patch white.

7. Young male. Australia. Upperparts of a beautiful fine chocolate tinge, end of tail blackish brown; underparts white, the base of the hairs like upperparts; chest-mark inconspicuous, ear-patch white.

8. Young female. Australia, neighborhood of Melbourne. F. Müller, 1865. Colored like N^o, 2; no mark on the chest.

9. Very young female. Australia, 1873. Upperparts greyish black; end of tail black; underparts, ear-patches, hands and feet white.

10. Adult male. Van Diemensland. Type specimen of Temminck's *Phalangista vulpina* (Mammalogie. I. p. 5). Upperparts brownish grey, base of tail like back, for the rest black; underparts rusty yellow; a rusty brown mark on the chest; ear-patch dirty white.

11. Adult female. Van Diemensland. Voyage of Lewis. Upperparts rusty black, darker towards the hind part of the back; tail black; underparts rusty brown.

12. Adult female. Van Diemensland. Verreaux. Colored like the former; ear-patch brownish black.

13. Nearly fullgrown female. Van Diemensland? Colored like the former, but less dark.

14. Younger male. Van Diemensland. Frank. Upperparts and tail brownish black; underparts brownish with a reddish shade; a rusty brown broad mark on the chest.

15. Very young male. Van Diemensland. Colored like N^o. 9; mark on chest hardly visible.

We possess nine skulls of this species and the skeleton of N^o. 2. The latter presents 13 costales, 6 lumbares, 2 sacrales and 25 caudales.

Remark. Mr. Oldfield Thomas of the British Museum fixed the attention of the naturalists to Kerr's Animal Kingdom (Annals and Magazine of Natural History, 1879, 5th series, Vol. IV, p.p. 396 and 397). Mr. Thomas stated that *Phalangista vulpina* Shaw is a synonym of *Didelphis vulpecula* Kerr.

NOTE V.

DESCRIPTION OF A NEW SPECIES
OF THE NITIDULID GENUS PLATYNEMA, RITS.
(ORTHOGRAMMA, MURRAY ¹) NEC GUENÉE).

BY

C. RITSEMA Cz.

Of this species I have seen three specimens, captured in the Andaman Islands, and of these Mr. A. Sidney Olliff has been good enough to let the Leyden Museum have two; I therefore propose to call the species

Platynema Olliffi.

Length 4,5 mm. — Elongate, subparallel, gradually widening a little towards the middle of the abdomen, depressed, shining, dark piceous with tinges of purple, green and blue, which are more conspicuous on the thorax than on the head, elytra and abdomen; the part of the head before the eyes, as well as the two basal joints of the antennae rufous; the extreme lateral margins of the thorax narrowly testaceous; the elytra testaceous, passing into dark brown at the sides and into piceous at about two thirds of their length; the apical margin of the abdominal segments narrowly testaceous; the legs dark brown, brighter at the knees; the tarsi pale testaceous.

1) This generic name, which dates from the year 1864, cannot be retained, as Guenée had already used it in 1852 in the Lepidopterous family Noctuidae. I therefore propose to substitute Murray's name by *Platynema* (from πλατυς, flat, and νήμα, a thread).

The head of about the same length as the thorax; the sides behind the eyes slightly convex, parallel; epistome with two projecting slender teeth which are divergent and slightly directed downwards; the angle between the teeth is rounded; the head is flat or even faintly impressed on the disk, and covered with a strong but rather distant punctuation.

The sides of the thorax, which is a little narrower at the base than in front and widest about the middle where it is wider than the head, are regularly convex; the anterior angles declinate, the posterior ones broadly rounded and provided with a small impression; the disk is flat and provided along the middle with a large ovate very shallow impression, which extends from the front margin to the base; an excessively fine mesial line may be observed at the bottom of this impression; the impression is rather more distantly punctured than the head; on the sides of the thorax the punctures are more close together and elongate. Scutellum triangular, strongly transverse, impunctate or with a very few large punctures.

Elytra distinctly longer than, but scarcely so broad as the thorax, the sides parallel, the apex conjointly rounded, the sutural region depressed. They are punctate-striate, but the striae disappear before the apex.

Abdomen distantly punctured, the third segment with a shallow central impression; the pygidium raised along the middle. Some long testaceous hairs are present along the sides of the abdomen and on the pygidium.

No doubt this species will prove to be closely allied to *fuscipennis* Murr. from Sarawak (Borneo) and to *denticeps* Murr. from Singapore.

Up to this time no species have been described in this genus, besides those described by Mr. Murray and enumerated in the 3rd volume of the *Catalogus Monacensis*.

Leyden Museum, November 1884.

NOTE VI.

A NEW SPECIES OF THE BUPRESTID
GENUS CALODEMA.

DESCRIBED BY

J. R. H. NEERVOORT van de POLL.*Calodema Ribbei*, v. D. POLL.

Long. 40 mm.; lat. ad humeros 15 mm. — *Caput aureo-viride, fortiter punctatum, inter oculos bisulcatum, vertice canaliculato.* — *Thorax viride-cupreus utrinque macula rufa notatus, nitidus, leviter punctatus, convexus, disco linea laevissima longitudinaliter impressus, apice bisinuato, lateribus productis paulo post medium, basi profunde bisinuata, lobo medio valde elongato.* — *Scutellum parvum, transversum, reniforme.* — *Elytra cyaneo-viridia, violace-internitentia, in medio fascia lata flava ornata, subparallela, apicem versus angustata, subconvexa, punctato-striata, interstitiis tenuiter punctatis, apice utrinque fortiter bispinoso.* — *Subtus viridis, nitidus, abdomen flavum, ♂ segmenta marginibus viridibus, ♀ segmenta tertia et quarta prorsus viridia, pedes virides.*

Head golden-green, deeply punctured, with two curved grooves between the eyes, and with an impressed line along the vertex. Antennae bronzy-green, except the golden-green basal joint.

Thorax shining, bright golden-green, on each side with a large red spot, which does not join the frontmargin and leaves a punctiform green spot just within its limits; the line of demarcation between the red and golden-green co-

lour has an oblique direction; both spots are also visible on the undersurface. Strongly transverse, widest behind the middle, angularly convex in a transverse direction, finely and rather distantly punctured, with a slightly impressed mesial line. Anterior margin deeply bisinuate, about half as long as the base; sides strongly diverging in straight lines till behind the middle, then suddenly converging to the base; base very deeply bisinuate, with a narrow elongate median lobe. — Scutellum green, strongly transverse, semi-lunate, impunctate.

Elytra dark steel-blue, with green and purple tinges, and with a broad transverse yellow band across the middle. Slightly convex, nearly twice as long as broad at the base where they are lobed, the sides subparallel, narrowing in curved lines behind the yellow band; the apex of each elytron bi-emarginate and bidentate, the sutural emargination small and very oblique. Deeply punctate-striate, the interstices convex, finely punctured, much more strongly between the 7th and 8th striae, and at the shoulders where the punctures become confluent, so as to give a rugose appearance.

Beneath shining green, the sides of the breast strongly and closely punctured. Abdomen very finely punctured; in the male yellow, the segments bordered with green, the apical one semicircularly emarginated in the middle; in the female yellow, with the 3rd and 4th segment green. Legs golden-green.

Although this beautiful species differs in some points, especially in the shape of the thorax and scutellum, from the two other described species, I do not believe the creation of a new genus necessary or desirable.

Of the six specimens, captured at Ureiuning (Aru Islands) by Mr. C. Ribbe (to whom I dedicate the species), one ♀ is now in the collection of the Leyden Museum and another example of the same sex in that of the author.

Amsterdam, November 1884.

NOTE VII.

ON SOME RARE AND INTERESTING MAMMALS.

BY

Dr. F. A. JENTINK.

Dec. 1884.

Hapalemur griseus and *Hapalemur simus*.

(Plate 1 and 2).

In the Proceedings of the Zool. Soc. of London for this year (1884) Mr. Beddard wrote a very interesting paper regarding some points of the structure of *Hapalemur simus*. On page 392 he says a few words touching the differences between the skulls of *H. simus* and *H. griseus*. He says that he was able to verify the late Gray's statements (with regard to the differences in the skulls of the two species) with a single exception, and finally states that it seems to him that Gray was right in believing that Schlegel's figure of the skull of *Hapalemur griseus* was in reality that of *Hapalemur simus*.

Being able to settle this question it seems to me that it is my duty to fixe for a moment again the attention of the naturalists upon this matter.

At the time as the late Schlegel wrote his *Monographie*, entitled *Simiæ*, our Museum was not in the possession of a specimen of *Hapalemur simus* and at that time Schlegel never had had a skull of the named species in his hands. I can testify this as I personally assisted Prof. Schlegel

Notes from the Leyden Museum, Vol. VII.

when he wrote the named Monograph in 1875 and 1876. The first specimen (a skin with its skull) of *H. simus* reached us in the month of September 1877.

Now it is evident that in 1876 there being no specimen of *H. simus* in our collection it may be called an impossibility that Schlegel's figure of *H. griseus* published in 1868 could be that of *H. simus*.

The figures in question therefore belong truly to *Hapalemur griseus*; but how could Gray and Beddard doubt of the thing? I believe that I can give a satisfying answer. The study of the figures learned me that two of them are incorrectly drawn. I have before me a series of sixteen skulls of *H. griseus* and not a single of the most adult ones is by no means as broad as in the figure 4 a (plate 7 of the *Faune de Madagascar*). Indeed in looking at that figure it makes the impression as if it has been taken after a skull of *H. simus*. But a closer inspection shows that it has been misdrawn and differs for the rest widely from that of *H. simus*. Generally a skull attains its length at a relatively early period and afterwards becomes broader; for instance the skull of a specimen of *H. griseus* from East Madagascar collected by J. Audebert has the same length as Schlegel's figure 4 a and as all our fullgrown skulls, viz.: 61 m.m., notwithstanding the hindmost molar of upper and lower jaws are not yet developed: and in this young specimen the width of the skull measures 39 m.m., meanwhile the width of the skull of the fullgrown individuals measure 42 m.m. (not 45.5 m.m. as in figure 4 a of the *Faune de Madagascar*). The skull of our *Hapalemur simus* presents the following dimensions:

Length of skull	79 m.m.
Width of ditto	59 »

There is however another inaccuracy in one of the figures in the *Faune de Madagascar*, viz.: fig. 4 c shows no upper incisors.

Our large series of skulls of different ages demonstrates that the upper incisors *always* are present, even I can see

pretty clearly traces of these parts in the skull of a very adult specimen (perhaps that figured in the *Faune*).

Epomophorus comptus and *Epomophorus gambianus*.

In a small collection of Mammals and Birds offered to me for sale and made by Mr. Bohndorff in Niam-Niam-land, central Africa, I found specimens of the above named species. The locality is very interesting as it gives us new facts to demonstrate the wide distribution of a large number of species of Mammals over Africa.

Epomophorus comptus described by Allen after a specimen collected by Duchailu in Western Africa is represented in the British Museum by a single (see Dobson's Catalogue) specimen from Gaboon; as far as I am aware these two individuals were the only hitherto known. It is distinguished from all the other *Epomophori* by its extraordinarily developed second phalanx of the third finger, this phalanx being longer than the metacarpal bone of the same finger. The color and distribution of the fur have been very well described by Allen. The abdomen in our adult female presents a large yellowish white patch.

N. B. The above named collection Bohndorff's contained also specimens belonging to the following species: *Megaderma frons*, *Herpestes leucurus*, *Sciurus stangeri* and *Sciurus rufo-brachiatus*. That the first and second species should live in Niam-Niam-land was to expect, the appearance however of the two *Sciurus*-species in that country is very interesting, for up to this time they only have been observed on the West-coast of Africa: cf. my Monograph of the African Squirrels in the Notes from the Leyden Museum, 1882.

Paradoxurus stigmaticus Temminck.

This species seems to be very rare in the zoological collections and hitherto recorded merely from one locality,

Notes from the Leyden Museum, Vol. VII.

viz. from Borneo. Dr. B. Hagen presented a beautiful and fullgrown specimen to our Museum. It had been collected by him in the vicinity of Tandjong Morawa, Deli, N. E. Sumatra. As the skeleton of this individual has been preserved and is in our collection, I believe it to be not without interest to enter in some details, at the same time completing Temminck's description of the type¹⁾.

A well marked dark brown line runs from between the shoulders along the middle of the back as far as the base of the long and slender tail: this line is very inconspicuous in the type and perhaps therefore has been overlooked by Temminck. A whitish line occupies the middle of the nose. The skull agrees in many parts with that of *Paradoxurus trivirgatus*, but the bony palate extends still further backwards than in that species and the first upper premolar is placed close to the canine like in *P. musanga* and not at a distance like in *P. trivirgatus* and *P. musschenbroekii*.

Length of head and body 470 m.m.
 » » tail 525 »

The skeleton presents 13 costales, 7 lumbares, 3 sacrales and 38 caudales.

Gymnura alba Giebel.

In a paper on *Gymnura*²⁾ I pointed out that the white-colored specimens differ in several characteristics from the dark colored individuals and form a distinct species, which inhabits Borneo. I proposed to call this species *Gymnura candida*, a name given to this form by Dr. Günther in 1876³⁾; the only difference between Dr. Günther and myself being that he could find no specific characters and distinguished therefore the Borneo-form as a mere local variety, under the name *Gymnura rajlesii*, var. *candida*,

1) Esquisses zoologiques sur la côte de Guinée. 1853. p. 120.

2) Notes from the Leyden Museum. 1881. p. 166.

3) Proc. Zool. Soc. London. 1876. p. 425.

meanwhile I found several structural differences which I considered to be of specific value.

At present I know, that Dr. Günther and I have tried to point out a thing since long known as a fact! Indeed in 1863¹⁾ Prof. C. Giebel clearly demonstrated that the Borneo-form represents a quite distinct species: in his highly interesting argumentation, filling thirteen pages, he made out the matter in a very critical way and added two beautiful plates, one of the individual and one of the skeleton. He named the Borneo-species *Gymnura alba*. In consequence, Giebel's name having the priority, the Borneo-form futu-
rely must stand as *Gymnura alba* Giebel.

I see that Dobson in his »Monograph of the Insectivora» has overlooked too Giebel's paper on the subject. Dobson moreover considers the *Gymnura*-variety (Günther) and the *Gymnura*-species (Jentink) synonyms of *Gymnura rafflesii*. His reason we read on page 4 of the above referred work, viz.: »although the Bornean, compared with the Tenasse-
»rim and Sumatran specimens, appear to be altogether lar-
»ger and to have much lighter-colored fur, yet the mate-
»rial in the Museums is quite insufficient to decide whether
»this is due to age or race, or even to sex." This causa
movens of rejecting species is quite new, but hardly can
be called efficacious and is misplaced in a work of such a
high scientific value as Dobson's Monograph.

Ptilocercus lowii Gray.

This always very rare Mammal was described in the year 1848 by Gray after a specimen from Sarawak, N.W. Borneo. We received a specimen from Banka collected by the late Teyssman in 1872, and in 1882 Dr. Hagen presented to our Museum a specimen in spirits from Tandjong Morawa, Deli, N. E. Sumatra. This individual being in a very

1) Zeitschrift für die gesammten Naturwissenschaften. 1863. Bd. 22. p. p. 277—290. Taf. 1 und 2.

bad state of conservation so I prepared the skeleton of it. The locality - Sumatra - is new for this species.

The skeleton presents 14 costales, 5 lumbares, 3 sacrales and 31 caudales. The ribs are peculiarly broad. The clavicle is well developed; the bones of the forearms and of the hind legs are separate. The form of skull and teeth has been described by Gray in a few words. I add the following remarks. Bony palate like in *Tupaja*- and *Gymnura*-species; dental formula: i. $\frac{2-2}{3-3}$ c. $\frac{1-1}{1-1}$ p m. $\frac{3-3}{3-3}$ m. $\frac{3-3}{3-3}$.

Upper jaw: incisors with an interior basal cusp; the canine is sized and shaped like the two anterior premolars, incisors separated by a wide space, a similar interval separates the hindmost incisor from the canine; the canine, premolars and molars closely crowded.

Lower jaw: the first pair of incisors much shorter and smaller than the second incisors; the third incisor not half as high as the second one; the canine exceeds in height the two first premolars, of which the anterior is the most developed one; third premolar exceeds the molars in vertical extent; all the teeth closely crowded, with exception of the first and second incisors, which are separated by a very narrow interval.

NOTE VIII.

FOUR NEW SPECIES OF EXOTIC COLEOPTERA.

DESCRIBED BY

C. RITSEMA Cz.***Lucanidae.****Gnaphaloryx perforatus*, n. sp. ♂.

(Plate 3, fig. 1, 1a and 1b).

Length with mandibles 27,5 mm., that of the left mandible (which is a little longer than the right one) 8 mm. — Ground-color black, covered all over (with the exception however of the tip, the inner margin and the undersurface of the mandibles, the tip of the cephalic horn, and the clypeus) with a delicate brownish grey crust which does not hide the punctuation. The uppersurface of the mandibles, the margins of the thorax and of the elytra, and the scutellum, are densely beset with pale dirty yellow scales; moreover very small scales are present on the whole undersurface, whereas a small number of larger scales are arranged in ten longitudinal rows on the elytra. The tibiae seem to be sharply edged which is caused by rows of densely set erect scales. The punctuation of the head is quite similar to that of the thorax; the punctures are round and rather large, very shallow and provided with a point in the centre. The punctures on the elytra are smaller, deeper and more regularly distributed over the surface.

Notes from the Leyden Museum, Vol. VII.

The head is large, larger than the thorax; the sides are nearly straight, subparallel, inconspicuously convergent towards the base; the ocular canthus is narrow, straight on the outside, and entire; the space between the eyes and the produced lateral angles of the thorax is flattened in a perpendicular direction; the front margin of the head is regularly concave, perforated in the middle (above the bidentate clypeus) by a large and deep circular hole, and has the lateral angles rounded; the vertex is provided with an elongate horn which is directed forwards, and slightly curved downwards at the tip. The mandibles are slender, about as long as the head and thorax together, slightly curved, furcate at the tip; the upper tooth of the furcation very blunt and curved, the lower tooth pointed and more developed in the right than in the left mandible; the furcation is preceded in both mandibles (of which the right one is a little shorter than the left one) by two teeth of different size; in the left mandible the distance between these teeth and the furcation is considerably larger than in the right one, and in the latter the median or smaller tooth is only indicated by a small tubercle; on the uppersurface of the apical half of the mandibles a raised smooth line may be observed. — The prothorax anteriorly a little wider than the base of the head, the latter being more or less embayed between the anterior angles which are produced and rounded; the front margin is bisinuate, the basal margin straight with rounded lateral angles; the sides are straight, convergent towards the base. In the hind corners an oblique impression is present; it touches the basal margin and is bounded laterally by two divergent ridges. The middle of the disk is flattish. — The elytra are about as broad as the base of the thorax, and one and a half as long as broad. — The prosternum is longitudinally impressed between the coxae. The rather short anterior tibiae are armed on the outer margin with five teeth (besides the two apical ones) of which the first is very small and the second and fourth smaller than the third and fifth; the four pos-

terior tibiae are armed in the middle on the outside with a spine which is very distinct on the middle legs, but almost not noticeable on the hind pair.

Hab. Sumatra. — A single male specimen, kindly presented in exchange to the Leyden Museum by Mr. J. R. H. Neervoort van de Poll.

This is the third horned species described in the genus *Gnaphaloryx*. The two others are: *miles* v. Voll. from Halmaheira and Gebeh, and *tricuspis* Rits. from Sumatra.

Cetoniidae.

Argyripa subfasciata, n. sp. ♀.

(Plate 3, fig. 2).

Length 25 mm., width of the shoulders of the elytra 12,5 mm. — Above partially covered with a yellow crust, partially velvety. Beneath brilliant metallic green shading into blue, with a golden lustre, the mesosternal appendage, a line along the middle of the mesosternum, a semicircular spot at the middle of the base of the 2nd—5th abdominal segment, and numerous points on the thighs and on the sides of the breast and abdomen black; the tibiae and tarsi are also black.

The clypeus pale golden green with a beautiful metallic hue, the raised margins black; the remaining part of the uppersurface of the head covered with a yellow crust. — The uppersurface of the thorax covered with a similar yellow crust, with the exception of the central region where a large velvety black spot occurs, which has (at least in the single specimen before me) the shape of the head (with exerted antennae) and thorax of a large clavicorn beetle, viz. a *Necrophorus* 1). Moreover a few black points are present on the anterior half near to the lateral margins. —

1) Perhaps the shape of this spot will prove to be variable, as the presumed antennae are formed by a conglomeration of black points.

The elytra velvety, dark purple inclining to black, provided with three curved, more or less interrupted transverse bands and two apical spots of a yellow crust. The first of these bands, situated just behind the shoulders, is widely interrupted in the middle, and joins the base of the elytra along the lateral margins; the second band, just before the middle, is only interrupted by the raised sutural margins; the third band, at about three fourth of the length of the elytra, is divided in four spots of nearly equal size; the two apical spots are convergent towards the suture by which they are separated and leave the sutural angles free. — The pygidium is dull black, rugose, and bears erect black hairs.

The head is broadly impressed along the middle, finely punctate, the punctures become however larger and deeper towards the margins, the margins themselves upturned and rugose; the middle of the clypeus slightly raised, the front-margin faintly emarginate at the top, the lateral angles rounded. — The frontmargin of the thorax angularly produced in the middle, the produced portion densely pubescent beneath. The sculpture of the thorax and elytra is hidden by the yellow crust and velvety substance, but faint traces of longitudinal costae may be observed on the latter; the sutural margins are rather strongly raised, and neither spined nor rounded at the apex. — The anterior tibiae unarmed, densely scratched in a longitudinal direction; the intermediate and posterior tibiae faintly notched at the middle on the outside, covered with large punctures, and fringed inside with long black hairs. The mesosternal appendage porrect, semicircular. The anterior femora densely, the intermediate and posterior femora as well as the sides of the breast and abdomen remotely punctured.

A single female example, probably from New Grenada.

The species here described is the third pertaining to Thomson's genus *Argyripa* ¹⁾. The *type* of the genus is

1) J. Thomson, *Typi Cetonidarum*, etc p. 11 (1878).

Allorhina Lansbergei Sallé¹⁾ from Santa-Fé de Bogotá, incorrectly placed by Messrs. Gemminger and von Harold in the genus *Blaesia* Burm., and to which, according to Mr. O. E. Janson²⁾, *Allorhina hypoglauca* Westw.³⁾ from Nicaragua and Bogotá, ought to be referred as a synonym. The remaining *Argyripa*-species is *Allorrhina anomala* Bates⁴⁾ from Chontales (Nicaragua), for, although Mr. Chevrolat says in the description of *Allorrhina Hueti* Chevrl.⁵⁾ from Guatemala: »Elle a de grands rapports avec l'*Allorrhina anomala* Bates», I believe these affinities to be more apparent than real: the anterior tibiae being tridentate (unarmed in *Argyripa*), and the frontmargin of the thorax (judging from the figure) straight, not produced in the middle as is the case in *Argyripa*.

LamIIDae.

Pelargoderus semitigrinus, n. sp. ♀.

(Plate 3, fig. 3).

Strongly resembling *P. bipunctatus* Dalm. but easily recognizable by the pubescence of the head, scape of antennae, legs and undersurface of the body, which is densely variegated or marbled with glossy black.

Length 26—28,5 mm. — Black, the elytra with a faint bronzy green tinge; covered with a short yellowish brown pubescence which is paler on the second and following joints of the antennae (where moreover the pubescence is very dense), and more reddish on the head, thorax and elytra. On the latter, which have each a small round bare spot at the middle, it is sparingly speckled with greyish; on the head, scape of antennae, legs and undersurface of the

1) Ann. Soc. Ent. de France. 1857. p. 617; pl. 13, n°. III. ♂.

2) Cistula Entomologica. Vol. II. p. 146. (May 1877).

3) Trans. Ent. Soc. of London. 1874. p. 475; pl. 7, fig. 6. ♀.

4) Trans. Ent. Soc. of London. 1869. p. 388.

5) Ann. Soc. Ent. de Belgique. Vol. XIV. (1870—71). p. 6; pl. 1, fig. 1.

body it is densely variegated or marbled with small, irregular, bare spots.

Head and scape of antennae faintly rugose by a strong and rather confluent punctuation. Thorax faintly rugose, a little narrower and longer than in the allied species, the sides nearly straight and parallel, with scarcely any trace of lateral spine. The scutellum broadly truncated at the apex, the angles rounded; the sides nearly parallel; a triangular smooth space on the middle along two-thirds of its length. The elytra rather strongly punctured, with glossy granules at the base; the apices obliquely truncate, the sutural angle rounded, the outer one pointed and slightly produced. Body beneath and legs finely and distantly punctured; on the sides of the metasternum some faint transverse wrinkles may be observed.

Two female specimens from Sumatra (Müller and Schagen van Leeuwen). — The one sent over by Mr. Schagen van Leeuwen has been captured at Kotta Zuydewijn near Solok, and shows on the outside of the bare elytral spot a similar but smaller one.

Obs. Since the publication (1873) of the 10th volume of the »Catalogus Coleopterorum», two other species of this genus have been described, viz.:

P. vitticollis Thoms., Ann. Soc. Ent. France. 1878.
Bull. p. XVIII. (*Rhamses*) . . . Borneo.

P. rugosus C. O. Waterh., Proc. Zool. Soc. London.
1884. p. 218. Timor-Laut Islands.

Tetraglenes diuroides, n. sp.

(Plate 3, fig. 4).

Length 16 mm., that of the antennae 17 mm.; width of the shoulders of the elytra 2,5 mm. — Black; parts of the mouth and legs pitchy brown; subshining, covered with a strong punctuation which is more or less reticulate on the elytra, sparingly provided with short decumbent bristles; moreover several of the punctures on the sides,

and on the apical portion of the elytra are filled up by a very short and dense whitish pubescence. — The head is covered with deep punctures which however are not so large and not so densely set as on the thorax and elytra; the face is sparsely beset with greyish hairs, and the sides, behind the antennary tubers, are speckled with small dots of a short and dense whitish pubescence. The scape of the antennae is slightly curved outwards and shows deep punctures which are placed rather wide apart; it bears short decumbent bristles, is speckled laterally with a whitish pubescence, and densely fringed beneath with rather short black hairs which disappear however towards the apex. The following joints of the antennae are very finely and densely sculptured in a longitudinal direction and fringed with long black hairs.

The thorax is faintly contracted before and behind the middle, the front margin is straight, the basal one bisinuate; it is densely covered with large and deep punctures and speckled laterally with small dots of a short and dense whitish pubescence; traces of a similar pubescence may be observed along the middle of the back. The scutellum is rounded, slightly transverse, impunctate, and vaguely impressed in the middle.

The elytra are somewhat broader than the base of the thorax; the shoulders are rounded, the sides nearly parallel as far as a little before the apex where they narrow rather suddenly; the apices themselves are prolonged, sharply pointed at the end and divergent, leaving between their inner margins an equilateral triangle. The punctures or pits are still larger than those of the prothorax and more or less reticulate; several of the pits on the sides and on the apical portion (and also a few ones along the suture) are filled up by a short and dense dirty white pubescence; a somewhat impressed longitudinal streak, common to both elytra, is present on the middle of the basal portion.

Body beneath not very densely covered with deep punc-

tures; the legs covered with an ash-colored pile, variegated with bare stripes and spots.

Hab. Deli: East Sumatra (Schagen van Leeuwen). — A single specimen.

This is the fourth species described in the genus *Tetraglens* Newman. The other three species are: *insignis* Newman, from Manilla (*type* of the genus), *fusiformis* Pascoe, from Borneo, and *phantoma* Gerstäcker, from the Island of Zanzibar.

Leyden Museum, November 1884.

NOTE IX.

DEUX ESPÈCES NOUVELLES DE CUCUJIDES
DES ÎLES DE LA SONDE.

DÉCRITES PAR

Ant. GROUVELLE.1. *Læmophloeus insularis*, n. sp.

(Plate 4, fig. 1).

Elongatus, subconvexus, subnitidus, glaber: capite thoraceque rufo-ferrugineis, elytris testaceis: capite dense striolato, prothorace punctato, basin versus angustato, lateribus rectis; utrinque unistriato; scutello transverso; elytris tristriatis, conjunctim rotundatis, lateribus plicatis.—Long. 2 mill.

Allongé, un peu convexe, glabre, légèrement brillant. Antennes courtes. Tête d'un roux ferrugineux, densément striolée, bord antérieur tri-sinué; front avec une impression à la base de chaque antenne et une strie longitudinale de chaque côté. Prothorax de même couleur que la tête, légèrement transversal, aussi large en avant que la tête, fortement rétréci vers la base; ponctuation forte, assez espacée, points un peu allongés surtout vers la base. Disque du prothorax avec une strie longitudinale de chaque côté et une impression transversale devant la base. Ecusson transversal. Elytres testacées, parallèles, un peu plus larges que la base du prothorax, arrondies ensemble au som-

Notes from the Leyden Museum, Vol. VII.

met, tri-striées avec une fine ligne de points dans les intervalles; bords légèrement pliés. Pieds testacés.

Un exemplaire mâle de Soekadana: Sumatra méridionale (I. C. van Hasselt). — Musée de Leyde.

2. *Silvanus javanicus*, n. sp.

(Plate 4, fig. 2).

Elongatus, subconvexus, rufo-ferrugineus, antennis elongatis; capite transverso, utrinque pone oculos haud denticulato; thorace elongato, obsolete bisulcato, lateribus subparallelis, angulis anticis acutis, elytris punctato-striatis. — Long. 2 mill.

Allongé, subconvexe, roux ferrugineux, légèrement pubescent. Antennes très-allongées, articles intermédiaires grêles, massue très-accusée. Tête transversale, angles postérieurs arrondis. Prothorax allongé, à bords latéraux presque droits, très-faiblement rapprochés vers la base, angles antérieurs aigus, saillants en avant. Elytres plus larges ensemble que le prothorax, en ovale allongé, ponctuées-striées.

Java. — Batavia (Sijthoff). Musée de Leyde. — Des tabacs provenant de Java. Collection Grouvelle.

Nice, Novembre 1884.

NOTE X.

NERITINA (CLITHON) SUBOCELLATA,
v. MARTENS, MS.

DESCRIBED BY

M. M. SCHEPMAN.

(Plate 4, fig. 3, 3a and 3b).

With the species of the Genus *Neritina*, which I received for revision from the Leyden Museum of natural history, I found three specimens of this form, which Prof. von Martens, after specimens in my own collection, thought to be new and named it *subocellata*; but as far as I know it has not yet been described. With the approbation of the Conservator of the conchological department of the Museum I will now give a description.

Shell nearly globular, delicately striated in the line of growth, with a few striae in the form of folds near the suture, and with microscopic spiral striae. The colour is greyish olive-green, with small blackish spots, which are rounded or triangular, sometimes flow together and vary greatly in size and number; they are mostly bordered by a very small rim of a lighter colour. The last whorl is more or less angular above and shows there from one to four spines in some examples, others are entirely spineless, but show still traces of them on the penultimate whorl and one is quite destitute of spines. The spines are short, curved upwards and sometimes a little backwards. Spire

Notes from the Leyden Museum, Vol. VII.

very small, eroded, probably 2 whorls and a half, which form a flat cone. Suture not deep, covered by the margin of the next volution. Aperture moderate, obliquely semi-elliptical; upper margin curved, outer and lower margin rounded, interior of the aperture bluish, the callosity near the muscular scar, moderately long, low; the columellar plain callous above, with a narrow layer of enamel, which has the aspect of shagreen, becomes thicker towards the free edge and shows there a small sinuosity with 4 to 6 denticles, besides a few secondary ones; the sinuosity is bordered above by a much greater dentition and still higher are a few crenulations which form grooves to behind.

Operculum semilunar, on the outside with very small granulations, yellowish, grey towards the outer margin and the nucleus, with a reddish rim, inside similarly coloured; of the two apophyses the rib is broad at the top, flattened, pale yellow; the other apophyse is orange-yellow, an intermediate wall of nearly the same height connects it to the rib.

Alt. 14, greatest diameter 13 mill.

Three specimens from Besoekie, Java, in the river at Proeger; two from the same locality and one from Kema (Celebes) in my own collection, all found by Dr. Semmelink.

This species has some affinities to *N. brevispina* Lam., but it is smaller, more smooth than *brevispina* commonly is, and the colour is quite distinct, none of the specimens shows any trace of the black band near the suture, that seldom fails in *N. brevispina*. The colouring reminds one the *N. rarispina* of Mousson, but that species is smaller and, according to the figures and description, of a much more oblique shape.

Rhoon near Rotterdam, December 1884.

NOTE XI.

DESCRIPTION OF A NEW GENUS OF BOSTRYCHIDÆ.

BY

the Rev. H. S. GORHAM.

Apoleon, g. n.

Caput prominens, antennae decem-articulatae.

Labrum haud discretum; mandibulae validae, apicibus dentatis.

Prothorax lateribus angulatis, angulis subelevatis, basi contracto, antice submuricato, tuberculari.

Coxae anticae contiguæ, tibiae anticae muticae.

Elytra subaequalia, apice haud declivia.

This genus with something of the general appearance and exposed head of the new world genus *Polycaon*, is in its details nearer to *Apate*. The peculiar structure of the prothorax and the nearly smooth elytra remove it at once from all other Bostrychidae.

The head is exerted very much as in *Polycaon* but is not so wide, being very much narrower than the thorax; the antennae are ten-jointed and the club is long and lax, the terminal joint being as long, or nearly so as the two preceding it, compressed and faintly sinuous.

The mandibles are not so acutely pointed as are those of *Polycaon*, and hence when shut their tips would not overlap, but they are massive, and with a blunt notch. The palpi are as usual, nearly simple, i. e. a little compressed, and a little truncate at the tips.

The thorax is broader than long, the back forms a

sort of ridge, terminating in the angles of the sides. Behind this ridge it is quickly contracted both laterally and horizontally. The middle is longitudinally depressed, and at the base of the head there is also a fine longitudinal line. The anterior coxae are formed as in *Polycaon*, *Apate*, etc., i. e. they are subglobose, and they are contiguous here as in *Apate*, the sockets being open behind. The front tibiae present an important distinction, being quite smooth externally and scarcely dilated at the apex. The abdomen and other parts of the body do not appear to me to present any important points of difference.

Apoleon edax, sp. n.

Breviter cylindricum, fuscum, parum nitidum, parce pubescens, prothorace transverso, lateribus valde angulatis, angulis subelevatis, fere mucronatis, disco antice parce muricato, medio utrinque tuberculis duobus parum distinctis, basi constricto. Elytris crebre obsoletius punctatis, pube brevissima lineatis. — Long. 13–15 millim.

Hab. Laos (*Mouhot*); Borneo: Sarawak (*Wallace*). Coll. Gorham. — Sumatra: Soekadana (*v. Hasselt*). Mus. Leyden. — Malacca. Coll. D. Sharp.

This insect has been known to me for many years, two specimens having been obtained by me from the collection of W. W. Saunders Esq^{re}. Sometime since my friend C. Ritsema sent me for description a beautiful example from Sumatra, and Dr. Sharp has very obligingly lent me a specimen in his own collection for the same purpose. These four examples are all that I have seen.

The head with the mandibles is nearly opaque, closely and finely granulated, the sculpturing of the mandibles is coarse but generally hidden by the rough yellow pubescence; the front part of the head is more or less coarsely squamose, the eyes prominent, finely granulate.

The thorax has the front with about twenty acute tubercles on each side, the central channel and the base of

the thorax being free from them. The pubescence on the elytra would be scarcely visible, if it were not arranged in lines, corresponding with the scarcely elevated nervures. The surface of the elytra is thickly and evenly but not deeply punctured, they are together uniformly rounded at their apices without any trace of declivity.

The larger specimens are those from the mainland, but there is not any very great difference in the specimens before me.

The sexual characters are not apparent.

Southampton, December 1884.

NOTE XII.

REMARKS ON HYMENOPTERA AND COLEOPTERA.

BY

C. RITSEMA Cz.***Hymenoptera.***

1. I have proposed (cf. Deyrolle's Naturaliste. VI. p. 559, 15 Nov. 1884) to substitute the generic name *Darala* Ritsema (Notes Leyd. Mus. VI (1884). p. 81, Hymenoptera: Larridae) nec *Darala* Walker (List Lepid. Ins. Brit. Mus. IV (1855). p. 886, Lepidoptera: Bombycidae) by ***Dalara***.
2. *Xylocopa Forbesii* Kirby ♀, from the Timor-Laut Islands (Proc. Zool. Soc. London. 1883. p. 344) = *Xylocopa coronata* Smith (Journ. Proc. Linn. Soc. Zool. V (1861). p. 135) from Kaioa (Brit. Mus.) and Halmaheira, Batjan and Ternate (Leyd. Mus.), the different iridescence of the wings, the only *difference* mentioned by Mr. Kirby, not being of specific value, as the specimens in the Leyden Museum, although doubtless belonging to one and the same species, show considerable variations in that respect.

Coleoptera.

1. I propose to substitute the generic name *Metallactus* Albers (Deutsche Entom. Zeitschr. XXVIII (1884). p. 303, Coleoptera: Lucanidae) nec *Metallactus* Suffrian (Linnæa Entom. XVI (1866). p. 248, Coleoptera: Chrysomelidae) by ***Metallactulus***.
2. I propose to substitute the generic name *Oxyrhynchus* Schönherr (Disp. Meth. 1826. p. 77, Coleoptera: Curculionidae) nec *Oxyrhynchus* Spix (Test. et Ran. Bras. 1824. Amphibia: Bufonidae) by ***Cryptoderma***.
Leyden Museum, December 1884.

Notes from the Leyden Museum, Vol. VII.

NOTE XIII.

DESCRIPTION D'UNE ESPÈCE NOUVELLE DE
HALIPLIDES.

PAR

M. RÉGIMBART.*Peltodytes sumatrensis*, n. sp.

Long. $4\frac{3}{4}$ mill. — *Ovalis, brevis, modice convexus, rufo-testaceus; capite inter oculos valde angusto, punctis fortibus haud crebris et inaequaliter dispositis instructo; pronoto inaequali, postice transversim excavato. ceterum ad basin utrinque foreis duabus munito, punctis antive sat regularibus, ad latera rugosis, disco laevi, lateribus rectis, ante angulum posticum angulatis. Elytris late creatis, secundum basin transversim impressis, postice paululum attenuatis, ante apicem late emarginato-sinuatis, apice subacuto et leviter producto, seriebus decem punctorum notatis: punctis magnis, fortiter impressis, secundum basin majoribus, in serie suturali et externa paulo minoribus; maculis nigris sat evidentibus, sicut apud alias species dispositis. Coxarum laminis postice angulatis.*

Espèce très voisine des *Peltodytes rotundatus* Aubé et *duodecimpunctatus* Say, ayant la coloration du second, et presque entièrement la sculpture du premier. La portion de la tête intermédiaire aux yeux est plus étroite que d'habitude et plane, pourvue de points gros et espacés sans ordre; le pronotum, à surface très inégale, présente une dépression transversale en forme d'accent circonflexe située au devant de la saillie scutellaire, une fossette noirâtre située de chaque côté de cette dépression et une autre

fossette très irrégulière occupant la région de l'angle postérieur et remontant en avant le long du bord externe qui est très relevé et qui présente une dent obtuse en avant de l'angle postérieur; la ponctuation est assez régulière dans le tiers antérieur, très rugueuse et confuse sur les côtés et plus forte que chez les autres espèces, avec le disque lisse. Les points sériaux des élytres sont encore plus forts et plus espacés que chez le *rotundatus*, ceux des deux séries interne et externe un peu plus petits; le point basal de chaque série est énorme, très enfoncé et détermine avec ses voisins une dépression transversale. Les plaques des hanches postérieures sont anguleuses en arrière.

Le caractère le plus curieux de cet insecte consiste dans la saillie anguleuse que présentent les bords externes du pronotum un peu en avant des angles postérieurs.

Hab. Sumatra or.: Medan, Deli (W. Dates). — Un seul exemplaire.

• Evreux, Décembre 1884.

NOTE XIV.

ON EXOTIC DIPTERA.

BY

F. M. van der WULP.

Part 2.

Fam. *Stratiomyidae*.1. *Evasa impendens*, Walk.

Nerua impendens, Walk. Proc. Linn. Soc. IV. 97. 24.

A few specimens from Pagowat: Celebes sept. (Forsten) and from the Aru Islands (v. Rosenberg).

The genus *Nerua* Walk. (Proc. Linn. Soc. III. 80) cannot be distinguished from *Evasa* (Proc. Linn. Soc. II. 109). Consequently, the first of these names, being of later date than the second, must be suppressed as a synonym.

2. *Evasa scenopinoides*, Walk.

Nerua scenopinoides, Walk. Proc. Linn. Soc. III. 81. 17;

Ost. Sack. Ann. Mus. Gen. XVI. 415; — *Evasa pallipes*, Bigot, Ann. soc. ent. de France. 1879. 220. 4.

A ♀ from Gilolo (Forsten).

3. *Tinda indica*, Walk.

Biaestes indicus, Walk. Ins. Saund. II. 81. pl. III,

f. 3; — *Tinda modifera*, Walk. Proc. Linn. Soc. IV. 101.

Notes from the Leyden Museum, Vol. VII.

30; Ost. Sack. Ann. Mus. Gen. XVI. 413 and XVIII. 17; — *Phyllophora bispinosa*, Thoms. Dipt. Eug. Resa. 454. 16.

A male from Java (Semmelink).

No doubt the species quoted above are synonyms. The genus *Tinda* of Walker is quite the same as his genus *Biastes*. *Biastes indicus* is the oldest name of the species, but the generic name *Biastes* having been preoccupied by Panzer (Hymenoptera), the name *Tinda* must prevail.

Caenacantha, n. g.

From *κλινοσ* (strange, unusual) and *ἀκκυσξ* (spine).

Frons angusta (in ♀). *Antennae subulatae, subtus capitis medium insertae; stylus terminalis brevis, acuminatus. Oculi subpilosuli. Thorax elongatus; scutellum magnum, elevatum, supra spinis duabus erectis et in margine posteriori spinulis duabus minoribus munitum. Abdomen breve, thoracis latius. Pedorum anticorum insertio ab insertione pedorum posteriorum longe remota. Alae abdominis multo longiores; cellula discoidalis superne cum cellulam mediastinalem (stigmatem) cohaerens, venas tres longitudinales versus alarum marginem emittens.*

Head hemispherical, at the most as broad as the front-side of the thorax; front narrow (♀). Antennae (Pl. 5, fig. 1b) subulate, as long as the head, inserted below the middle of the profile of the head; the two basal joints short; the third at least three times as long as the foregoing joints together, indistinctly annulated, with a pointed style at the tip. Rostrum short. Eyes (seen with the aid of a lens) with a short and dense pilosity. Thorax oblong, a little enlarged towards the abdomen; scutellum (fig. 1a) strongly developed, pyramidally raised, with four spines, two of which are directed upwards like horns, whereas two smaller ones are placed on the broad and flattened hind portion of the scutellum. Abdomen shorter and notably broader than the thorax, composed by five visible segments. Legs rather short; the insertion of the front

pair far removed from that of the two posterior pairs. Wings much longer than the abdomen; discal cell trapezoidal, on the upperside contiguous with the mediastinal cell (stigma) and emitting three longitudinal veins towards the margin.

4. *Caenacantha bipartita*, n. sp.

(Plate 5, fig. 1, 1a and 1b).

Ferruginea; *antennarum stylo, puncto ocellari, rostro, palpi, scutelli parte posteriori et abdomine nigris; alis flavescentibus, macula subapicali nigro-fusca.* — ♀. Long. 9,5 mm.

Ferruginous; style of the antennae, ocellar point, rostrum and palpi black. Thorax covered with a sericeous fulvous toment, provided with a narrow black stripe along the middle of the back, and laterally with a similar stripe extending from the shoulders to the base of the wings; when held in a certain direction three longitudinal sericeous bands are visible, of which the central one is divided by the black mesial stripe; the breast is blackish. The hind part of the scutellum and the spines are shining black; the smaller posterior spines have yellow tips. Abdomen dull black, the sides of the basal segments rufous. Legs and halteres reddish-yellow. Wings hyaline, with a yellow tinge; veins and stigma reddish-yellow; before the tip a large, not distinctly limited, darkbrown spot is present.

A ♀ from Bogotà (v. Lansberge).

5. *Negritomyia bilineata*, Fabr.

Stratiomys bilineatum, Fabr. Syst. Antl. 79. 5; — *Clitellaria bivittata*, Wied. Auss. Zweifl. II. 46. 1; — *Ephippium angustum*, Macq. Suit. à Buff. Dipt. I. 252. 2; — *Rhaphiocera spinithorax*, Macq. Dipt. ex. supp. 3. 17. 3; — *Clitellaria tenebrica*, Walk. List Dipt. Brit. Mus. III. 522; — *Ephippium spinigerum*, Dol. Nat. Tijdschr. Ned. Indie. X. 407. 13. pl. 9 f. 2.

Notes from the Leyden Museum, Vol. VII.

This species seems to be very common in Java, as it is represented in almost every collection from that island.

6. *Stratiomyia japonica*, n. sp.

Nigra; scutello, praeter spinas flavas, concolore; facie pilis lutescentibus vestita; fronte (in ♀) maculis duabus luteis nitidis; maculis lateralibus segmenti abdominalis secundi, strigis transversis lateralibus segmentorum sequentium duorum et macula subtrigona segmenti quinti flavis; ventre nigro, segmentis singulis postice flavo-marginatis; tibiaram dimidio basali tarsisque flavis; alis infuscatis. — ♂, ♀. Long. 16—17 mm.

Black. Face densely covered with yellowish hairs; eyes of the ♂ connected at the top; front of the ♀ above the antennae with two shining yellow, round spots. Antennae black; first joint elongate; second very short, hardly one sixth of the length of the first; third joint longer and broader than the two former. Thorax with a dense but not very long, greyish-yellow pilosity; spines of the scutellum yellow. Abdomen a little broader and longer than the thorax, with the usual yellow markings, consisting of two rather large, trigonal lateral spots on the second segment, a pair of lateral stripes on the hind margin of the third and fourth, and an elongate longitudinal spot on the fifth segment; venter black with the hind border of the segments yellow, that of the second segment the broadest. Legs black; the basal half of the tibiae and the whole tarsi yellow. Halteres yellow. Wings brownish, darker towards the anterior margin.

Both sexes from Japan (von Siebold).

I should be inclined to regard this species as *Str. apicalis* Walk. (List Dipt. Brit. Mus. V. 53. 105), if Walker, who describes only the ♀, had mentioned the two yellow spots on the front, and if his description of the legs did not disagree with the specimens before me.

7. *Stratiomyia flavoscutellata*, n. sp.

Nigra; scutello, maculis lateralibus sublunulatis in abdo-

minis segmentis 2, 3 et 4, maculaque trigona in segmento 5 flavis; ventre luteo, strigulis nigris in segmentorum singulorum medio; facie et thorace pilis lutescentibus vestitis; pedibus flavis, femoribus tibiaramque annulo medio nigris; alis dilute brunnescentibus. — ♂. Long. 15 mm.

Black. Face covered with yellowish hairs; the vertex and the trigonal front with black hairs. Antennae black; second joint hardly one fourth of the length of the first; third joint as long as the foregoing together and a little broader. Thorax densely clothed with rather long, greyish-yellow hairs; scutellum broad, its spines shining yellow. Abdomen notably broader but not longer than the thorax; the segments 2, 3 and 4 with yellow lateral spots on the hind border; those of the second segment the largest and subtrigonal, those of the third segment rounded on the inner side; those of the fourth segment narrow on the outside, enlarged and rounded on the innerside; fifth segment with a trigonal yellow spot on the hind margin; the last segment yellow; venter pale yellow, each segment with a small black transverse band, which is narrowed or even interrupted in the middle. Legs reddish-yellow; femora black except the tip; tibiae with a more or less distinct black ring at the middle. Wings light brownish; the veins towards the anterior margin bordered with a fulvous tinge.

A ♂ from Java (Müller).

8. *Odontomyia viridana*, Wied.

Stratiomys viridana, Wied. Anal. entom. 29. 34; id. Auss. Zweifl. II. 66. 8; — *Odontomyia ruficornis*, Macq. Dipt. ex supp. 4. 54. 3.

A ♂ from Tibet (Felder).

Although Wiedemann does not indicate the sex, his description evidently refers to the ♀ only Macquart on the contrary describes exclusively the male sex. Comparing the two descriptions there seems to be no doubt, that they have had in view the same species. Wiedemann received his

specimen from Bengal; Macquart mentions Asia as origin.

9. *Odontomyia mutica*, n. sp.

Nigra; thorace pilis flavis vestito; scutello mutico; abdomine lateribus et subtus flavo; antennis rufis; pedibus flavis, femoribus nigris; alarum basi nigra. — ♂. Long. 11 mm.

Face shining black (I find traces of white hairs); antennae dark rufous. Thorax black, densely covered with yellowish hairs; scutellum black, destitute of the usual spines. Abdomen yellow, on the upper surface with a broad black band, which at each segmentation is drawn out on both sides in a point; or in other words: abdomen black, with large, yellow, lateral spots, which occupy the whole length of the segments and slightly narrow towards the middle; these spots are broader on the three basal segments; the last segment and the whole undersurface yellow. Legs yellow with black femora. Halteres yellow, the stem dark brown. Wings with a brownish-yellow tinge, dark brown at the base.

A ♂ from Ternate (Bernstein).

Except the absence of the spines on the scutellum, the species shows all the characteristics of the genus *Odontomyia*, in the same manner as the North American *O. nigrirostris* Löw.

10. *Pteticus apicalis*, n. sp.

Fulvo-rufescens; antennis, pedibus halteribusque concoloribus; abdominis segmentis ultimis ex purpureo fuscis; tibiarum posticarum apice, tarsorumque posticorum articulis duobus basalibus fusciscentibus; alis flavescentibus, dimidio apicali infuscato. — ♂. Long. 15—16 mm.

Closely related to *Pt. rufescens* v. d. Wulp (Tijdschr. v. Ent. XI. 104. 7. pl. 3 f. 7—9), but differing from that species by its rufous (not black) vertex, reddish-yellow (not black) hind femora and the brown apex of its wings.

Obscenely fulvous. Hind part of the vertex rather broad, narrowed in a point towards the front, which is almost

trigonal and of a pale yellow color above the antennae. The latter are reddish-yellow, the arista fuscous. Thorax brownish, with a slight indication of three longitudinal dark bands, and with a dense and short, yellowish pilosity. Abdomen convex; the two or three last segments dark purplish brown; genitals fulvous, very prominent and complicated. Legs reddish-yellow; the apical half of the hind tibiae and the two basal joints of the hind tarsi brownish; the basal half of the posterior femora thicker than the distal half; hind tibiae slender at the base. Halteres reddish-yellow. Wings with a fulvous tinge on the basal half, brownish on the distal half, darker towards the anterior margin; hind margin, below the anal vein, greyish.

A few male specimens from Sumatra (van Lansberge) and a single one from Borneo (Müller).

I should be inclined to regard this species as *Pt. leoninus* Rond. (Ann. Mus. Gen. VII. 454), but Rondani describes the last abdominal segment with the genitals as being black.

11. *Ptecticus illucens*, Schin.

Schiner, Dipt. Novara-Reise, 65. 40.

Both sexes from Japan (von Siebold).

This species differs from the greater part of the other species of the genus *Ptecticus* by its dark coloration; the shape of the antennae however, — the second joint being prolonged at the inner side and projects over the third, — leaves no doubt, that it must be placed in that genus.

Sargus tenebrifer Walk. (List Dipt. Brit. Mus. III. 517) from China seems to be closely related; it has however only a yellow base at the front femora, while the anterior knees and tarsi have not that color. As this species for the rest agrees in all respects, it certainly ought to be placed in the genus *Ptecticus*.

12. *Ptecticus brevipennis*, Rond.

Sargus brevipennis, Rond. Ann. Mus. Gen. VII. 454.

Notes from the Leyden Museum, Vol. VII.

Three male specimens from Java (Blume).

Rondani's description, taken from a damaged specimen, agrees in the most essential points. The antennae in his specimen being absent, he remained in doubts whether the species must be placed in the genus *Sargus* (sensu restricto). It belongs to the genus *Ptecticus*, as the second joint of the antennae projects at the inner side over the third joint.

My specimens have a length of 11—12 mm. The vertex is black and, like in other species of this genus, it is gradually narrowing towards the lower part and ends in a point at a little distance above the antennae, in which point the eyes are connected; front trigonal, greyish yellow and somewhat swollen; face short and of the same color; antennae, rostrum and palpi bright reddish-yellow; arista black. Thorax reddish-yellow; its upper surface rather brownish, with three black longitudinal stripes in front, of which the median one ends at the suture, whereas the outward ones depass it (Rondani mentions but a single black stripe); pleurae with a large metallic black spot in front, which extends downwards over the breast, and with a similar spot above the hind coxae; the metathorax also is black or has a large black spot in the middle. The upper surface of the abdomen with five transverse black bands, which are enlarged in front and narrowed on both sides. Legs reddish-yellow, the hind ones having the basal half of the coxae and femora, the whole tibiae and the first joint of the tarsi black; the latter clothed with short black hairs. Wings with a brownish-grey tinge and with hardly any indication of the stigma.

13. *Ptecticus latifascia*, Walk.

Sargus latifascia, Walk. Proc. Linn. Soc. I. 110. 28.

A ♂ from Soekadana: Lampongs, in Sumatra (van Hasselt); a ♀ from Java (Blume).

Walker's description agrees in all respects, especially in the colour and markings of the legs. I must however remark, that the thoracic dorsum is a little infuscated in the

male specimen and in the Javanese female even shows three blackish longitudinal stripes. On account of the shape of the second joint of the antennae, the species belongs to the genus *Ptecticus*.

In the male specimen the genitals are very prominent; they consist of a two-jointed, slightly curved, blackish-brown upperpiece, the terminal joint of which is short and beset with bristles; and of a pair of lamellar inferior appendices, each of which bears a subapical, small, short-stemmed, shining-black scale, which is hairy on the under-side; in the middle the long, pale-yellow penis is visible.

14. *Sargus metallinus*, Fabr.

Sargus metallinus, Fabr. Syst. Antl. 258. 11; Wied. Auss. Zweifl. II. 36. 16; — *S. formicaeformis*, Dol. Nat. Tijdschr. Ned. Ind. XIV. 403. pl. 3, f. 5.

A single specimen from Rambodde, Ceylon (Felder) in the Leyden Museum; another from Java (Piepers) in my collection.

According to Doleschall's figure and description, *S. formicaeformis* cannot be distinguished from *S. metallinus*, and is not identical with *S. mactans* Walk., as is supposed by Osten Sacken (Ann. Mus. Gen. XVI. 417), the most striking character of the latter species, — the black base of the hind tibiae, — being absent in that of Doleschall.

15. *Sargus mactans*, Walk.

Walk. Proc. Linn. Soc. IV. 97. 22; Ost. Sack. Ann. Mus. Gen. XVI. 417.

Two female specimens from Rambodde in Ceylon, presented to the Museum by Dr. Felder.

Walker's description is taken from a much damaged specimen (without head), likewise a female, from Borneo.

The specimens in the Leyden Museum have a length of 10 mm. and are chalybeous, with purple gloss and short grey pi-

losity. Front metallic violet, pale yellow above the antennae; face reddish-yellow, infuscated and a little metallic below; oral parts pale yellow. Antennae reddish-yellow, the arista black. From the shoulders to the root of the wings goes a yellow stripe; scutellum with a narrow yellowish hind margin. Legs reddish-yellow; hind coxae metallic black; base of the hind tibiae, for about a third, black; the last joints of the hind tarsi also are blackish. Halteres fulvous. Wings greyish, almost hyaline at the basal half; veins black; stigma fuscous.

16. *Sargus laetus*, n. sp.

Thoracis dorso, scutello et metanoto aeneo-viridis; capite, abdomine pedibusque testaceis; abdominis segmentis 2 et 3 supra fusco-subfasciatis, 4 et 5 nigro-viridis nitidis; tibiarum posticarum basi nigro; oculis subcohaerentibus. — ♂. Long. 12 mm.

Front above the antennae reddish-yellow, tapering upwards to a metallic green stripe, which hardly separates the eyes; face and oral parts pale yellow. Antennae testaceous, arista black. Thoracic dorsum, scutellum and metanotum bright metallic green, with yellow pilosity, which on the front part and in the sides is longest; scutellum with a narrow yellowish hind margin; pleurae testaceous with some metallic reflection. Abdomen shining reddish-yellow, with a metallic or copper-colored gloss; second and third segments each with a brown transverse band; two posterior segments metallic dark green; genitals black. Legs reddish-yellow, base of the hind tibiae slender and black. Halteres yellow with a brown knob. Wings with a greyish-brown tinge; stigma a little darker.

A male specimen from Sumatra (v. Lansberge).

On account of the black base of the hind tibiae closely related to *S. mactans*. I should consider it as the ♂ of that species, if not the coloration and pattern of the abdomen were quite different.

17. *Sargus pubescens*, n. sp.

Violaceus nitidus, *pallide hirtus*; *thorace linea laterali*, *antennis pedibusque flavis*; *alis cinereis*, *stigmatе testaceo*. — ♀. Long. 15 mm.

Front narrow, chalybeous; the swollen broader part above the antennae pale green. Antennae and oral parts reddish-yellow. Thorax, scutellum and abdomen metallic violet, with a dense, pale-yellow, erect pilosity; from the shoulders to the root of the wings a yellow stripe; scutellum with a narrow yellow hind margin. Legs reddish-yellow; posterior coxae blackish; hind tibiae slightly curved. Halteres yellow, their steal infuscated below the knob. Wings brownish-cinereous; stigma testaceous.

A female specimen from Gorontalo (Forsten).

18. *Hermetia batjanensis*, v. d. Wulp.

H. batjanensis, v. d. Wulp, Tijdschr. v. Ent. XXIII. 161. 8; — *H. cerioides*, Ost. Sack. Ann. Mus. Gen. XVI. 411.

Three female specimens, one from South-Halmaheira (Bernstein), another from Morotai (Bernstein) and the third from Andai (von Rosenberg).

Two of these specimens differ from those which I described in the »Tijdschrift», in having the four yellow spots on the second abdominal segment confluent, so as to form a pair of large lateral spots, which are a little contracted in the middle. The underside of the antennae is partly brownish-red and the tibiae are for the greater part of the same color.

It strikes me that Walker's description of *Massicyta cerioides* (Proc. Linn. Soc. III. 78. 8) quite agrees with my *Hermetia batjanensis*, if I do not mind to the generic character: »abdomen obclavatum, subpetiolatum» (Proc. Linn. Soc. I. 8), which very obviously is indicated in Prof.

Westwood's figure of *Massicyta bicolor* (l. c. pl. 1, f. 1). My specimens are by no means similarly shaped, though the first abdominal segment may be somewhat narrower than the following ones, as is mentioned in my description. Perhaps Walker would in later times not have stuck closely to this character of his genus *Massicyta*, the only one by which it is distinguishable from *Hermetia*. Surely the specimens mentioned by Osten Sacken are identical with mine.

Closely allied to *H. batjanensis*, if not identical with it, may be *H. Melanesiae* Bigot (Ann. soc. ent. de France, 5th ser. IX. 1879. 262. 4); however I do not see the yellow hairstripes on the thorax, mentioned by him, and which may have been rubbed off in my less sound specimens. Moreover they have the scutellum wholly yellow, whilst in the description of *H. Melanesiae* it is called yellow with a black base (the rather ample diagnose does not mention this).

If afterwards by a comparison of the typical specimens, *Massicyta cerioides* Walk., *Hermetia Melanesiae* Big. and my *H. batjanensis* might prove to belong to one and the same species, the name *cerioides* Walk. must be accepted, as being the oldest.

19. *Hermetia armata*, n. sp.

Nigra; scutello bispinoso; abdominis incisuris 2 et 3 aureo-tomentosis; ventre rufescente; pedibus piceis, tibiis tarsisque flavescentibus; alis flavidis. — ♀. Long. 17—19 mm.

This species has all the characters of the genus *Hermetia*, excepting that the scutellum is armed with two spines, a character upon which later most likely a new genus will be founded; for the present however, such a separation does not seem to be urgent.

Black; head and thorax a little shining. Head broader than the thorax; front about one fourth as broad as the head, flat, with a longitudinal groove; face convex

with a testaceous pilosity; eyes with small facets and densely covered with hairs. Antennae black, inserted in the middle of the profile of the head, almost as long as the thorax; first joint elongate, slender at the base, a little thickened towards the end; second joint one fourth as long as the first; third joint twice as long as the two previous joints together, forming a narrow, indistinctly annulated lamella. Rostrum pediform; palpi small. Thorax covered with dark-brown or black hairs; scutellum with two subperpendicular, piceous spines, the tip of which is reddish-brown. Legs piceous; tibiae and tarsi covered with a very dense sericeous reddish-yellow pilosity; tibiae without spurs; the hind tibiae curved. Halteres reddish-yellow. Wings longer than the abdomen, with a reddish-yellow tinge and veins of the same color; discal cell bluntly trigonal, emitting four longitudinal veins, which, though thin, are distinctly visible as far as the hind margin.

Two female specimens from Morotai (Bernstein).

20. *Eulmeta marginata*, Fabr.

Hermetia marginata, Fabr. Syst. Antl. 63. 3; — *Eulmeta marginata*, Wied. Auss. Zweifl. II. 43. 1; Macq. Suit. à Buff. Dipt. I. 259. 1; id. Dipt. ex. supp. 3. 16. pl. 1, f. 9; Walk. Proc. Linn. Soc. I. 8. 16; — *Toxocera limbiventris*, Macq. Dipt. ex. supp. 4. 45. 1. pl. 5, f. 3.

About the synonymy of *Toxocera limbiventris*, see Ost. Sack. Berl. Ent. Zeitschr. 1882. p. 367. Indeed, when comparing Macquart's two figures (though they are far from satisfying), this synonymy is so evident, that it is almost incomprehensible, that Prof. Brauer, when writing his »Revision der Notacanthen», did not observe it. A long time before, Snellen van Vollenhoven was aware of this synonymy and mentioned it in a meeting of the Dutch Entomological Society in 1856 (See »Handelingen der Nederl. Entom. Vereeniging" p. 107).

Fam. *Xylophagidae*.21. *Subula inamoena*, Walk.

Solva inamoena, Walk. Proc. Linn. Soc. IV. 98. 25; —
Subula inamoena, Ost. Sack. Ann. Mus. Gen. XVI. 407.

A ♀ from Java (Macklot).

Baron Osten Sacken was quite right, when declaring (l. c.) the genus *Solva* Walk. synonymous with *Subula* Megerle, Meig. In fact *Solva inamoena* Walk. resembles so much the European *Subula varia* and *marginata* Meig., that nobody, acquainted with these species, will separate them generically. *S. inamoena* is nearest to *S. varia*, both having yellow coxae and rather long antennae. In the specimen of the Leyden Museum the third joint of the antennae is dark-brown on the outside and yellow with a brown tip on the inner side; the yellow humeral calli are larger than in *S. varia*, and the yellow stripe extending from the shoulders to the root of the wings, as well as the yellow segmentations of the abdomen are broader.

According to Osten Sacken (l. c.) *Subula flavipes* Dol. (Nat. Tijdschr. Ned. Ind. XVII. 85. 18) may be the same species as *S. inamoena* Walk. A drawing from the hand of Doleschall¹⁾ however allows many doubts as to their identity, for Doleschall has figured the abdomen of his species reddish-brown with black dorsal spots, a pattern which by no means is to be seen in *S. inamoena*.

1) Original colored drawings from Doleschall, representing the greatest part of the Diptera described by him in Vol. XVII Nat. Tijdschr. Ned. Ind., were in the possession of the late Mr. Snellen van Vollenhoven some years ago. After his death they came into the hands of Mr. J. Puls at Gend (Belgium), who kindly allowed to make two copies of them. Of these copies, made with great accuracy by the well-known engraver A. J. Wendel at Leyden, one belongs to the Dutch Entomological Society at Leyden, the other to Baron Osten Sacken at Heidelberg.

Fam. *Tabanidae*.22. *Tabanus immanis*, Wied.

Wied. Auss. Zweifl. I. 123. 17; v. d. Wulp, Dipt. Sumatra-Exped. 16. 1.

Several female specimens, all from Sumatra.

The eyes are bare, bronze-colored, and, after being moistened, without crossbands.

23. *Tabanus rubidus*, Wied.

Wied. Dipt. ex. I. 69. 14; id. Auss. Zweifl. I. 127. 25; Walk. Proc. Linn. Soc. I. 9.

Several female specimens from Java (Blume and Ludeking) and from Sumatra (v. Lansberge).

The eyes as in the preceding species.

24. *Tabanus striatus*, Fabr.

T. striatus, Fabr. Ent. Syst. IV. 371. 39; id. Syst. Antl. 103. 47; Wied. Auss. Zweifl. I. 155. 69; v. d. Wulp, Dipt. Sumatra-Exped. 16. 3; — *T. dorsilinea*, Wied. Anal. ent. 22. 10; id. Auss. Zweifl. I. 124. 110.

Several specimens of both sexes from Java (Hekmeyer) and from Sumatra (v. Lansberge).

Eyes bare, in the ♂ reddish-bronze above, with large facets, the lower third and the borders blackish with small facets; the two parts distinctly separated; in the ♀ the eyes are uniform dark-bronze, with small facets.

25. *Tabanus minimus*, v. d. Wulp.

v. d. Wulp, Dipt. Sumatra-Exped. 18. 7.

Two females from Ambarawa in Java (Ludeking).

I need to add to my description l. c., that the eyes are

Notes from the Leyden Museum, Vol. VII.

bare and of a bronze color, with small facets; even after having been moistened they show no trace of crossbands. In these Javanese specimens the yellow color of the legs is so pale, that it may be called whitish.

26. *Tabanus basalis*, Macq.

Macq. Dipt. ex. I. 1. 126. 10.

Two female specimens from Sumatra (v. Lansberge).

In the most essential points they agree with the description. There are however some disagreements to be mentioned. 1°. According to the description the third and following segments of the abdomen ought to be shining black; in my specimens the color of these segments is fuscous and rather dull; moreover the hind margin of the segments shows remains of a white hairfringe; the under-surface is wholly fuscous and there the white fringe is complete, even on the second segment. — 2°. According to Macquart the legs are blackish, the tibiae yellow with black tips; this may be the truth in regard to the front legs, in the posterior ones however I find the tibiae brown and not darker at the end.

This species may be easily recognized by the light brownish-yellow color of the two first abdominal segments, on account of which it resembles more or less the N. American *T. cinctus* Fabr.

The eyes are bare, reddish-bronze, without crossbands even after having been moistened, and with very small facets all over.

27. *Tabanus multipunctatus*, n. sp. ¹⁾

(Plate 5, fig. 2).

Griseus; thorace striis quatuor fuscis; abdomine maculis

1) Besides this new species of *Tabanus* and the following ones, described here, there are still several others in the Leyden Museum, which I must leave undetermined, because I cannot recognize them among the existing des

nigricantibus quatuor in singulis segmentis; ventre castaneo; oculis nudis; antennarum articulis basalibus rufescentibus, articulo tertio nigro; palpis pallidis; pedibus rufis, albido-puberulis; halteribus nigris; alis subhyalinis. — ♀. Long. 21 mm.

Face with whitish dust, on the lower part with a dense white pilosity; palpi pale yellow; front moderately broad, light grey, between the corners of the eye with a rounded, shining, reddish-brown knob, which in the middle is grooved and extends upwards in a narrow line, ending in a blackish spot on the vertex. Eyes bare, dark coppery, and without crossbands even after having been moistened. The two basal joints of the antennae reddish; the second very short and embraced above by the first joint; the third one black, rather slender, its upper angle with a slightly projecting tooth. — Thorax, scutellum and abdomen with compact light-grey dust, on the thorax four ill-defined brown longitudinal bands, the two central ones of which are confluent posteriorly, whilst the two outermost are beginning but behind the suture. Abdomen conical, but little convex; on the front margin of the second and following segments a pair of blackish spots, placed close together, and a pair of lateral ones, being a little larger; undersurface of the abdomen of a chestnut color. — Legs uniform brownish-red, in some directions grey, owing to the whitish dust by which they are covered; the tarsi a little darker; hind tibiae with a delicate, short, dense, erect pile. Halteres fuscous. Wings with a greyish tinge; veins dark-brown, bordered with pale brown, especially

criptions. On account of the exceedingly great number of species belonging to this genus (I think there are about 900), it is very difficult to decide with certainty whether a species is already described or not. It therefore would be of no use to science, to add new species to them; I think however that an exception can be made with regard to the species which I have described in this paper, because they are more recognizable than most of the others. A general revision of the exotic species of *Tabanus*, in the same way as Prof. Brauer has done it with the European ones, is very urgent.

Notes from the Leyden Museum, Vol. VII.

the crossveins and the base of the upperbranch of the furcated cell; first and fourth posterior cells not narrowed at the end.

A ♀ from Chimfimo (S. W. Africa), presented to the Leyden Museum by the late Mr. A. B. van Medenbach de Rooy.

28. *Tabanus leucaspis*, n. sp.

(Plate 5, fig. 3).

Ater opacus; oculis nudis; palpis pallidis; abdominis segmentis tribus primis albedo-pollinosi, segmentis 3 et 4 macula alba signatis; alis nigro-fuscis. — ♀. Long. 22 mm.

Related to *T. biguttatus* Wied., but differing from that species by its pale yellow (not black) palpi.

Face grey, on the lower part with a whitish pile; front dark grey; vertex black; between the corners of the eyes a shining black, round knob, extending upwards in a narrow black line. Eyes bare, black, without any trace of crossbands even after having been moistened. Antennae black, rather slender, the upper angle of the third joint with a small tooth. Palpi pale reddish-yellow. — Thorax and scutellum dull black; the thorax anteriorly with traces of grey longitudinal bands; pleurae grey. — Abdomen convex, dull black; the three basal segments very densely covered with a yellowish white dust, and provided with an ill-defined black dorsal band, in which a trigonal white dot is seen at the front margin of the third segment; a similar dot is present on the fourth segment. — Legs black; anterior femora beneath and hind tibiae on the outside with a delicate whitish pile. Halteres black; the tip of the knob yellow. Wings fuscous; the disks of all the cells a little lighter, especially that of the discal cell; first posterior cell slightly narrowed at the end.

A female specimen from the Gold Coast (W. Africa).

29. *Tabanus atripes*, n. sp.

(Plate 5, fig. 4).

Fulvus; abdomine testaceo; oculis nudis; antennis palpisque ochraceis; rostro, pedibus alarumque basi atris; tibiis anticis subdilatatis; alis cinereis, costa fasciaque media fuscis. — ♀. Long. 16 mm.

This species is related to *T. fasciatus* Fabr. and *latipes* Macq. Like those, it has a brown band on the wings and dilated anterior tibiae; from the former it differs by the entirely black legs, from the second by the yellow palpi.

Face, beard and palpi ochraceous, the latter not very large and pointed at the tip; front rather broad, a little darker and inclining to reddish-yellow, with a small, shining testaceous knob, ending upwards in a narrow line. Eyes bare; after having been moistened they become dark green with a slight violet reflection but show no crossbands; the facets are small over the whole surface. The two basal joints of the antennae are reddish-yellow (the third joint is broken off). Rostrum black. — Thorax and scutellum reddish-yellow; the pleurae ochraceous; towards the root of the wings a short but dense pale-yellow pilosity is present. Abdomen uniform testaceous; the under-surface lighter, in some directions cinereous with pale-yellow segmentations. — Legs black; anterior tibiae slightly dilated, convex on the outside; hind tibiae fringed on both sides with short black hairs. Halteres pale-green. Wings greyish; their extreme base black; their anterior margin brown as far as the subcostal vein, joined at its end to a broad crossband, which passes over the discal cell and slowly disappears towards the hind margin.

A ♀ from Ogowé (W. Africa), presented to the Museum by Mr. A. Fauvel.

30. *Tabanus bipunctatus*, n. sp.

(Plate 5, fig. 5).

Cinereus; oculis nudis; fronte lata, punctis duobus nigro-

nitidis signata; abdomine utrinque fulvescente, dorso maculis fuscis in seriebus dispositis; palpis albescentibus; antennis pedibusque rufis; pectorum anticorum tibiis (praeter basin) tarsisque nigris; posteriorum tibiaram apice tarsisque fuscis; alis hyalinis. — ♀. Long. 11,5 mm.

This species differs from all others known to me, by its very broad front, with two shining black dots.

Head light-grey; face and palpi whitish, the latter with some short black hairs; front occupying about one fifth of the breadth of the head, with two shining black dots above each other, which are more or less cordiform and longitudinally grooved. Eyes bare, reddish-bronze and without stripes after having been moistened. Antennae reddish-yellow; the two basal joints clearer; third joint on the upper part enlarged into a tooth at the base and further on slightly incised. Upper surface of the thorax cinereous, with hardly any indication of darker stripes; pleurae whitish. Abdomen dark cinereous, with pale-yellow segmentations, the four or five first segments reddish-yellow laterally; undersurface reddish-grey. — Legs reddish-yellow; the coxae whitish; front legs with the tip of the femora at the inner side dark brown, the tibiae, except their base, for more than two thirds fuscous, the tarsi black; on the posterior legs the tip of the tibiae and the four last joints of the tarsi dark brown; all the femora with a short, decumbent, white pile; the hind tibiae relatively long and fringed on the outside with short blackish hairs. Halteres whitish. Wings hyaline, on the anterior margin with a yellow tinge; the veins along the costa reddish-yellow, the other ones pale brown; the upperbranch of the furcated cell angular at its base.

Two female specimens from St. George d'Elmina, W. Africa (Nagtglas) in the Leyden Museum; two others from South Africa (de Sélys Fanson) in that of Brussels.

One of the specimens in the Leyden Museum has a small recurrent vein at the upperbranch of the furcated cell.

31. *Tabanus equestris*, n. sp.

(Plate 5, fig. 6).

Rufescens; facie palpisque pallide flavis; oculis nudis; antenarum articulo tertio infuscato; abdomine maculis dorsalibus trigonis albidis; pedibus anticis femoribus omnibus fusciscentibus; alarum basi fasciaque media fusciscentibus. — ♂, ♀. Long. 15,5—17 mm.

Face yellowish-white; beard of the same color; palpi pale ochraceous; front rufous, in the ♀ moderately broad, with a brown cordiform spot extending upwards in a line. Eyes bare, in the ♂ reddish-bronze above, with large facets; below for a third part and on the outward borders blackish, with much smaller facets; in the ♀ entirely bronze colored with small facets; even after having been moistened no trace of crossbands is to be seen. Antennae ochraceous; third joint infuscated, rather slender and on its upperside with a trigonal tooth. — Thorax, scutellum and abdomen rufous; thoracic dorsum a little infuscated, with indistinct stripes; hind margin of the scutellum greyish; last segments of the abdomen darker; their hind margin yellowish with small, trigonal, white, dorsal spots; on the undersurface the pale margins of the segments are broader. Legs and halteres fulvous; the femora and the whole front legs fuscous. Wings at the base brownish-yellow, in the middle with a rather broad brownish cross-band, which issues on the stigma and embraces the discal cell, but does not quite reach the hind margin; the costal cell is yellow.

This species seems to be not uncommon in the Sundalands; it is represented in the Leyden Museum by a ♂ from Sumatra (v. Lansberge), two females from Java (Blume and Ludeking) and four females from Borneo (Müller); it was since long time designed in the collection by the late Mr. Snellen van Vollenhoven under the name *equestris* n. sp. without having been described.

The species is related to my *T. pictipennis* (Tijdschr. v.

Ent. XI. 100. 3), the name of which, having been used before, is changed by Osten Sacken in *T. van der Wulpi* (Berl. Ent. Zeitschr. XXVI. 97); it differs, however, by its fulvous posterior legs, its more slender antennae, the third joint of which is darker, and by the pattern of the wings, showing, in stead of two crossbands, but a single one which passes over the discal cell.

32. *Tabanus Felderi*, n. sp.

(Plate 5, fig. 7).

Nigricans; antennis, palpis, abdominis segmentis tribus primis (praeter maculas dorsales in segmentis 2 et 3), segmentorum sequentium limbo postico, pedibusque rufis; oculis nudis; alis rufo-cinereis, ramo superiori nervi cubitalis angulato et nervulum recurrentem emittente. — ♂, ♀. Long. 22—23 mm.

Head greyish-white; face of the ♂ ochraceous; on the front of the ♀ a brown raised line, which is broader below. Antennae and palpi reddish-yellow; third joint of the antennae on the upper part with a rather sharp tooth, slender towards the end, the tip brown. Palpi in the ♀ as long as the rostrum, in the ♂ much shorter. Eyes bare, bronze colored, even after having been moistened without crossbands; in the ♂ the facets of the upper portion are larger. — Thorax and scutellum greyish-black, with hardly any indication of longitudinal bands; pleurae cinereous with a yellow pile. Abdomen in the ♂ pointed, in the ♀ a little narrower towards the end, in both sexes reddish-yellow; first segment blackish below the margin of the scutellum; on the second and third segments a dark grey dorsal spot; the following segments fuscous, with pale reddish-yellow hind margin; undersurface of the abdomen testaceous, with yellow hind margin of the segments. — Legs reddish-yellow; the tarsi a little darker; front coxae with a long pale yellow pile; hind tibiae in the male fringed with short hairs, the hairs of the outside black.

Notes from the Leyden Museum, Vol. VII.

Wings with a reddish-grey tinge; the upperbranch of the furcated cell angular at its base and with a recurrent vein.

A single pair from Ningpo (China), presented to the Leyden Museum by Dr. Felder.

33. *Chrysops striatus*, n. sp.

Thorace cinereo, striis tribus fuscis; abdomine ochraceo, striis quatuor nigris; capite flavescente, callo frontali nigro-nitido, callis facialibus testaceis nitidis; antennis, palpis pedibusque rufis; antennarum apice nigro; alis hyalinis; basi, costa usque ad apicem, fasciaque media, marginem inferiorem non attingente, fuscis. — ♀. Long. 6 mm.

Antennae one and a half as long as the head, almost bare, reddish-yellow, black towards the end; second joint shorter than the first; the third one about as long as the two others together. Front with yellowish-grey dust; the ocellar triangle darker; above the antennae a large, shining black knob; face rather prominent on account of the two large knobs, which are testaceous, very shining and coherent; cheeks with yellowish-grey dust. Rostrum fuscous; palpi reddish-yellow. — Thorax yellowish cinereous, with three very distinct fuscous stripes; scutellum colored like the thorax. Abdomen ochraceous, with two black longitudinal bands, which are interrupted at the segmentations, and moreover with a less distinct lateral row of blackish spots; under surface of the abdomen uniform ochraceous, darker towards the end. — Legs reddish-yellow; posterior coxae cinereous; tarsi brown; the tibiae not dilated. Halteres yellowish-brown. Wings hyaline; the base, the costal border and the usual crossband brown; the latter extends till half the breadth of the wing, surrounds the discal cell, the centre of which remains hyaline, and goes along the posterior crossvein and the apical portion of the postical vein.

A female specimen from Amoy: China (Buddingh).

34. *Chrysops dimidiatus*, n. sp.

Thorace piceo vitta laterali flava; abdomine fulvo-ochraceo, fasciis duabus nigris; antennis rufo-fuscis, capite duplo longioribus; palpis pedibusque fulvis, alarum dimidio basali subhyalino, apice fusco, basi costaque testaceis. — ♀. Long. 8,5 mm.

Antennae twice as long as the head, slender, dark reddish-brown, black towards the end. Front with a greyish-brown dust; above the antennae a semicircular, shining testaceous knob; face with a brownish-yellow dust, in the middle with a shining coffee-brown, oblong knob. Rostrum brown, slender, longer than the head; palpi rufous. — Thorax piceous, with a short fulvous pilosity; on the upper part this pilosity does not cover the derm; by its greater density it forms yellowish spots on the pleurae and coxae and a yellow lateral band from the shoulders to the root of the wings; the hind margin of the thorax and the whole scutellum covered with a testaceous dust. Abdomen reddish-ochraceous, with two rather broad black longitudinal bands, which begin at a little distance from the base and, at their end, flow together with the darkbrown color of the last segments; at the underside this marking is more or less visible; the abdomen has a fulvous pilosity, especially on the sides of the first segments. Legs yellowish-red; the last joints of the tarsi dark brown; hind tibiae straight, a little enlarged and with a not very obvious dark pile. Halteres dark brown. Wings testaceous at the base and along the anterior margin, then hyaline with some greyish tinge as far as the end of the basal cells; the remaining portion till the apex entirely dark brown, the usual dark crossband being confounded here with the border of the apex and hind margin; the separation is hardly indicated by some clearer spots; on the contrary the color is much darker at the beginning of the subcostal and auxiliar veins and along the central cross veins; the postical vein has a small brown border along its whole

length, even where this vein traverses the hyaline portion of the wing.

A ♀ from Chimfimo (S. W. Africa), presented by the late A. B. van Medenbach de Rooy.

Among the described African species of *Chrysops*, there is but one which may be taken into consideration here on account of the pattern of the wings, viz. *Chr. confluens* Löw (Dipt. S. Afrika's p. 102 n^o. 4 pl. 1 fig. 19); this species however has distinct light points in the dark portion of the wings and moreover a uniform black abdomen.

35. *Diachlorus diversipes*, Macq.

Diabasis ¹⁾ *diversipes*, Macq. Dipt. ex. Supp. 3. 13. 2.

A ♂ and ♀ from Surinam.

This species may be easily recognized from Macquart's description, notwithstanding only the ♀ was known to him. In the centre of the face a large shining black callosity is present, extending down to the oral margin but not entirely up to the root of the antennae. Perhaps in other specimens this callosity is divided into two parts, for Macquart mentions »deux taches noires rondes". This being the only difference, I consider the specimens of the Museum identical with that of Macquart.

In the ♂ the eyes are nearly coherent in their upper portion, and the thorax has a rather dense, erect pilosity.

Fam. *Bombyliidae*.

36. *Exoprosopa doryca*, Boisd.

Anthrax dorycus, Boisd. Voyage de l'Astrolabe (Faune de l'Océanie) II. 665. pl. 12 f. 12.

Besides *Anthrax ventrimacula* Dol., *A. Pelops* Walk. and

1) The generic name *Diabasis*, being already used among the Coleoptera, has been changed into *Diachlorus* by Osten Sacken.

Exoprosopa Leuconoe Jaenn., which are indicated already as synonyms of this species by Osten Sacken (Ann. Mus. Gen. XVI. p. 433), *Exoprosopa Audouini* Macq. (Dipt. ex. II. 1. 36. 1. pl. 16 f. 1) also belongs to it.

Two specimens from Amboina (Forsten), one from Timor (Macklot) and one from Atapoepoe in the same island (Wienecke).

37. *Exoprosopa cingulata*, n. sp.

Testacea; thoracis disco abdominisque vitta media fuscis; abdominis segmentis 2, 5, 6 et 7 albis; tibiis tarsisque fuscis; alis hyalinis, basi, costa (praeter partem apicalem) et semifascia in parte radicali cellulae discoidalis fusco-testaceis; cellulis submarginalibus quatuor. — ♀. Long. 15 mm.

Face conically prolonged, testaceous; front of the same color, rather broad, narrowed behind and with a reddish-ochraceous pilosity; occiput greyish-black. Antennae black, the third joint subulate. Thorax blackish; collar and pleurae with ochraceous pile; before the root of the wings and on the posterior angles some black bristles. Scutellum and abdomen testaceous, the latter with a dorsal blackish band; the second and the three last segments with a white toment, covering the derm. Legs testaceous; tibiae and tarsi piceous; posterior legs with small bristles. Halteres pale yellow, their stem black. Wings hyaline, at the base and along the costa with a dark brownish-yellow marking, which reaches as far as the outlet of the subcostal vein, emitting a halfband over the end of the middle basal cell and occupying, at the base of the wing, about the half of the inferior basal cell (anal cell); the longitudinal vein, which separates the two upper basal cells, is narrowly bordered with brown; there are four submarginal cells, the third of which is trapezoidal.

A ♀ from Adelaide, presented by Dr. C. Felder.

This species has the habitus and coloring of the South-American *E. Sancti Pauli* Macq.; it differs however by

the more defined marking of the wings, the band over the base of the discal cell, and especially by having four, instead of three submarginal cells.

38. *Anthrax Troglodyta*, Fabr.

Bibio troglodyta, Fabr. Syst. Ent. 759. 4; id. Mantiss. II. 329. 22; — *Anthrax troglodyta*, Fabr. Ent. Syst. IV. 262. 22; id. Syst. Antl. 127. 43; Wied. Dipt. ex. I. 147. 43; id. Auss. Zweifl. I. 306. 70; — *Anthrax hyalina*, Wied. Dipt. ex. I. 141. 34; id. Auss. Zweifl. I. 297. 57; v. d. Wulp, Tijdschr. v. Ent. XXIII. 165. 16; — *Anthrax lucens*, Walk. Dipt. Saund. III. 180.

A single specimen from Ambarawa in Java (Ludeking) and two from Sumatra (van Lansberge).

There seem to be no doubts, that *A. hyalina* Wied. is merely a synonym of *A. troglodyta* F.; therefore the species must bear the latter name. According to the description, *A. lucens* Walk. likewise belongs to the same species.

39. *Argyramoeba, distigma*, Wied.

Anthrax distigma, Wied. Auss. Zweifl. I. 309. 74; Macq. Dipt. ex. II. 1. 58. 9; Schin. Dipt. Novara-Reise, 122. 14; v. d. Wulp, Tijdschr. v. Ent. XXIII. 166. 19; — *Anthrax argyropyga*, Dol. Nat. Tijdschr. Ned. Ind. XIV. 401; — *Anthrax tripunctata*, v. d. Wulp, Tijdschr. v. Ent. XI. 109. 11. pl. 4 f. 1.

A specimen from Gorontalo and another from Guajaman in Celebes (v. Rosenberg), and two from Sumatra (v. Lansberge). The specimens from Sumatra are much smaller.

Besides the two black dots at the base of the furcated cell and the third posterior cell, there is sometimes a third dot on the small vein which form the base of the second posterior cell. It is this variety, which I described as a distinct species under the name of *A. tripunctata*.

40. *Argyramoeba melania*, n. sp.

(Plate 5, fig. 8).

Atra opaca; facie, collare, pleuris et utrinque abdominis segmentis 1, 4 et 5 niveo-pilosis; alarum dimidio basali nigro, colore nigra linea valde obliqua et in medio gradata terminata. — ♂ (?). Long. 13 mm.

Dull black. Front narrowed behind, longitudinally grooved, with a black pile; face scarcely prominent, with a white pile. Antennae black, short, pyriform, with a short style, the end of which (when seen through a lens) shows some minute hairs. Eyes angularly incised behind; the broad and convex occiput black, with a whitish reflex. Thorax with a black pile; the collar, the posterior border and the pleurae with a white pile; on both sides before the root of the wings some black bristles; hind margin of the scutellum and the first abdominal segment with a white pile; in the middle of the hind margin of the second segment a short white hair-stripe; the lateral pilosity of the first, the fourth and the fifth segments a little longer, accumulated and snow-white. — Legs black, the posterior ones with small bristles. Halteres black, the tip of the knob whitish. Wings hyaline with the basal half black or brownish-black; this dark color does not quite reach the hind margin, it covers the basal half of the discal cell and extends from there obliquely to the costa, about as far as the end of the costal cell; the extremity of the third basal cell (anal-cell) remains hyaline; the discal cell, the two inferior basal cells and the fourth posterior cell have a clearer disk; the upper branch of the cubital vein is angular at its base, with a recurrent vein.

I received two specimens (which I believe to be males), captured in Java by Mr. Piepers.

41. *Neuria indecora*, n. sp.

Nigra, flavo-pilosa; alis immaculatis, basi et cellula costali testaceis; cellulis submarginalibus tribus. — ♂. Long. 10,5 mm.

Shape oblong. Front trigonal, black; eyes coherent in the upper part; face almost entirely occupied by the strongly raised oral margin, which reaches near to the antennae. The antennae are black; in the unique specimen however they are in too bad a condition to be described; their base is surrounded by a dense black pile. Thorax and abdomen black, the sides of the latter parallel; the pilosity on the front portion of the thorax, on the pleurae and on the sides of the abdomen brownish-yellow; that on the thoracic dorsum, the scutellum and the last abdominal segments darker. Legs black. Halteres reddish-yellow. Wings brownish-grey; the extreme base and the costal cell testaceous; three submarginal cells; middle crossvein a little beyond the middle of the discal cell, which is oblong; first posterior cell narrowed at its end.

A ♂ from Poeloe Gamoe (Macklot).

42. *Bombylius pulchellus*, v. d. Wulp.

Tijdschr. v. Ent. XXIII. 164. 15. pl. 10 f. 8.

This Javanese species belongs to the genus *Comastes* O. Sack. (Western Dipt. p. 256), which as yet contained only a single species inhabiting North-America.

43. *Anastoechus longirostris*, n. sp.

Parvus, niger; pilositate capitis corporisque albo, in fronte fusco; abdomine setulis nonnullis nigris; rostro capite thoraceque longiori; pedibus luteis; alis cinereis, basi et costa flavescentibus. — ♀. Long. 5,5 mm.

Agrees in all generic characters with the American *A. barbatus* O. Sack. (West. Dipt. p. 252). The thorax and

abdomen however are more slender; the head is broader than the thorax and densely covered with long hairs; it is white on the face and darkbrown or blackish on the front, and between which the black antennae appear; terminal style of the latter as long as the pyriform third joint; the end of the style a little thickened. Rostrum black, as long as two thirds of the body. Thorax and abdomen thickly clothed with a long pilosity of a yellowish color and with a white reflection; on the sides of the abdomen, amongst this pilosity, some long, black bristles are present. Legs and halteres pale rufous. Wings with a grey tinge, yellowish at the base and along the costa; at the beginning of the costa a comb of black tipped yellowish hairs occurs; neuration exactly agreeing with that of *A. barbatus*.

A ♀ from the Himalaya (Felder).

44. *Systoechus leucopygus*, n. sp.

Nigricans, *flavo-hirtus*, *mento*, *pectore anoque albo-hirtis*; *antennis rostroque nigris*; *pedibus luteis*; *alis cinereis*, *basi et costa testaceis*. — ♂. Long. 10,5 mm.

General appearance like in our European species of *Bombylius*. Blackish, covered with a very dense yellow pilosity, which becomes fulvous on the collar and has a silvery white reflection on the last abdominal segment; front small, trigonal; face short; both with a sericeous pale-yellow pile; beard and the hairs on the pleurae and the breast white. Antennae black; the first joint cylindrical, the second short, the third a little longer than the two previous joints together, subulate. Rostrum black, as long as the thorax. Legs yellow, with small bristles, those of the front legs very short. Halteres reddish-yellow. Wings greyish, at the base and along the costa, as far as two thirds of its length, with a brownish yellow tinge.

A ♂ from Adelaide (Felder).

NOTE XV.

A MONOGRAPH OF THE GENUS CUSCUS.

BY

Dr. F. A. JENTINK.

February 1885.

A rare constancy in color of the fur in some species, a nearly endless variety in other species and a very peculiar geographical distribution render the study of this beautiful group of Marsupials very difficult but at the same time highly interesting and attractive. A thorough study based upon large and well selected series from the most different and distant localities is the only way to surmount the very difficulties. No wonder therefore that so many naturalists have failed in their efforts to recognize and circumscribe the species composing this group.

The *Cuscus*-species have half or more than half the prehensile tail destitute of hair and the second and third toes of the hind feet united in a common integument very nearly to the extremity. These two characters combined distinguish them from all the other Mammals.

In two species (*Cuscus celebensis* and *Cuscus orientalis*) the ears are externally clothed with hairs, internally naked; the two other species (*Cuscus ursinus* and *Cuscus maculatus*) have the ears externally and internally clothed with hairs. In one species, *Cuscus maculatus*, the sexes are differently colored and the females larger than the

Notes from the Leyden Museum, Vol. VII.

males; in another, *Cuscus orientalis*, have the individuals a dark line on the middle of the back and are the males larger than the females, meanwhile the other species have no spots or band on the back.

So the species may shortly be characterized as follows:

Ears naked internally,

1. back with a dark band; males larger than females:

Cuscus orientalis.

2. no differences in color or size between males and females: *Cuscus celebensis*.

Ears clothed internally,

3. males spotted, smaller than females: *Cuscus maculatus*.

4. no difference in color or size between males and females: *Cuscus ursinus*.

The form of the skull permits to distinguish two types, the one by a convex, the other by a concave forehead. *Cuscus maculatus* is the only representant of the first type, having a very swollen forehead; the three other species belong to the second type, although in different degrees, viz: the concavity of the forehead is the deepest in *Cuscus orientalis*, meanwhile in *Cuscus celebensis* it remembers the state of a not fullgrown *Cuscus orientalis*; this concavity is the less deep in *Cuscus ursinus* and here the foremost parts of the forehead form swollen cushions. In very young specimens already the specific form of the forehead is pronounced, the only differences between young and adult being that in young ones the concavity or convexity is less developed and that the crest along the middle of the occiput in fullgrown individuals is in the younger ones represented by two crests: these two crests arise in very young specimens from the sides of the occiput, in growing they approach one another, come together and finally unite into a single elevate crest, which ends at the beginning of the concavity or convexity on the forehead. The named crest is only well developed in perfectly adult specimens, some time after the whole development of the

hindmost molars. In our large series of skulls belonging to mounted specimens of all ages this process is to demonstrate on the most decisive way. Some specimens become the dentition complete at a very advanced age and attain a larger size than other specimens; our although large collection is however too small to decide whether these differences are constant to certain localities (islands) or are caused by the influence of temperature or food and independent from locality. The different degrees of development of the occipital crest have seduced some authors to regard not fullgrown specimens as distinct species.

Passing over the shape of the nasalia, which is constantly distinct in the different species, and other osteological details I will fix the attention upon the premolars as they show some particularities, especially in the specimens of *Cuscus orientalis* and *Cuscus maculatus*. *Cuscus orientalis* has three (of which one small) premolars in each upper-, and four (of which three small) in each lower jaw, meanwhile *Cuscus maculatus* wants the midmost (the small) upper premolar and has three lower premolars (of which two small). There are in the named two species several abnormalities as to the number of the small premolars, so that although there are no differences in the form of the skull or in the shape or number of the other teeth, some specimens have one or more small premolars too less or too much. This fact has been observed by Waterhouse, Gray, Alston and other naturalists, but it was impossible to decide what was the normal number and what abnormal, because they had no large series at their disposal. Among our number of sixty skulls of *Cuscus orientalis* I find a number of seventeen, which present abnormalities in the dentition: four have no trace of midmost upper premolar, viz: N^o. 121 (skull of N^o. 57), N^o. 138 (skull of N^o. 79), N^o. 141 (skull of N^o. 82) and N^o. 142 (skull of N^o. 83); two have no midmost left upper premolar, viz: N^o. 137 (skull of N^o. 78) and N^o. 143 (skull of N^o. 84); one has no midmost right upper premolar, viz: N^o. 147

(skull of N^o. 88); one has in each upper jaw two small premolars instead of one, viz: N^o. 104 (skull of N^o. 36); these spurious teeth are very small and sharply pointed. A skull, N^o. 139 (of N^o. 80) has a single small right lower premolar and two small left lower premolars; two have two small premolars in each lower jaw, viz: N^o. 111 (skull of N^o. 43) and N^o. 148 (a not fullgrown from Reinwardt's voyage); two have two small right lower premolars, viz: N^o. 109 (skull of N^o. 41) and N^o. 121 (skull of N^o. 57); two have two small left lower premolars, viz: N^o. 126 (skull of N^o. 66) and N^o. 140 (skull of N^o. 81); two have four small right lower premolars, viz: N^o. 147 (skull of N^o. 88) and N^o. 149 (a halfgrown from Banda); one has four small left lower premolars, viz: 119 (skull of N^o. 53); finally one has five small right and four small left lower premolars, viz: N^o. 104 (skull of N^o. 36): I remember that this skull has in each upper jaw two small premolars instead of one small premolar (see above).

Among forty skulls belonging to mounted specimens of *Cuscus maculatus* there are fifteen in an abnormal condition as to the dentition: one, viz: N^o. 55 (skull of N^o. 5) has in each upper jaw two incisors instead of three, and in the left upper jaw only the hindmost premolar and no trace of the two others; two, viz: N^o. 84 (skull of N^o. 39) and N^o. 86 (skull of N^o. 43) have in each upper jaw a small and pointed premolar placed between the two other premolars, and in each lower jaw three small premolars, instead of two: these spurious premolars are placed very close to the hindmost lower premolars; one, viz: N^o. 74 (skull of N^o. 26) has in the right upper jaw a small premolar placed between the two others; three, viz: N^o. 76 (skull of N^o. 29), N^o. 80 (skull of N^o. 34) and N^o. 82 (skull of N^o. 37) have in each upper jaw a small premolar placed between the two other premolars like in *Cuscus orientalis*; two, viz: N^o. 58 (skull of N^o. 8) and N^o. 91 (skull of N^o. 48) have only one small premolar in each lower jaw; two, viz: N^o. 65 (skull of N^o. 16) and N^o. 89

(skull of N^o. 46) have only one small premolar in the right lower jaw; three, viz: N^o. 54 (skull of N^o. 3), N^o. 63 (skull of N^o. 14) and N^o. 76 (skull of N^o. 29) have only a single small premolar in the left lower jaw; one, viz: N^o. 74 (skull of N^o. 26) has three small premolars in the left lower jaw; one, viz: N^o. 80 (skull of N^o. 34) has three small premolars in the right lower jaw; two, viz: N^o. 81 (skull of N^o. 35) and N^o. 82 (skull of N^o. 37) have three small premolars in each lower jaw; in two, viz: N^o. 56 (skull of N^o. 6) and N^o. 61 (skull of N^o. 11) the hindmost incisor of the right upper jaw is wanting; finally in N^o. 63 (skull of N^o. 14) five of the upper incisors are wanting (see above as to the lower jaws of this skull). In the skull of a skeleton (N^o. 153) of a nearly fullgrown individual there is in the right upper jaw no trace of the small premolar.

An adult skeleton (N^o. 8) belonging to a specimen of *Cuscus ursinus* and presented to our Museum by the Groningen-Museum has only one small premolar in each lower jaw.

Our skulls of *Cuscus celebensis* present no peculiarities or abnormalities.

Two of the species, *Cuscus ursinus* and *Cuscus celebensis* are exclusively restricted to Celebes, perhaps solely to the northern part of that island, meanwhile the two other species have a very wide geographical distribution: *Cuscus orientalis* has been met with from Timor to the Salomon-islands and New-Zealand (if Gray's statements are to be trusted) and from Morotai to the Arou-islands and New-Guinea; *Cuscus maculatus* from the Saleyer-islands to the Echiquier-group and Dufour-island and from Waigeou to the northern part of Australia, Cape York and neighborhood. *Cuscus orientalis* and *Cuscus maculatus* hitherto have not been found in Celebes. The Group of Halmahera seems to be only inhabited by *Cuscus orientalis*, like Timor and Banda. Further investigations must make out how far the here and below given oversight of the geographical dis-

tribution must be changed to become a clear and trusty idea as to this very important matter: just than it will be time to make scientific conclusions and so the door will be closed to vagous speculations and hypotheses without fixed base.

Quoy and Gaimard report: »Ces animaux (les Phalangers), que les naturels nous apportent pour être mangés, »semblent remplacer ici les paresseux de l'Amérique. Stupidés comme eux, ils passent une partie de leur vie dans »l'obscurité; et lorsque trop de lumière les fatigue, ils s'y »soustraient en se blotissant la tête entre les jambes. Ils »ne sortent de cette position que pour manger, ce qu'ils »font avec beaucoup d'avidité. Dans les bois, ils se nourrissent de fruits aromatiques, comme nous l'avons vérifié; et à défaut, les nôtres dévoroient de la chair crue. »Leur peau est tellement fine et tendre¹⁾ qu'en se battant »ils s'en arrachent des lambeaux. La même chose arrivoit, »lorsque se fixant à l'aide de leurs griffes aiguës, on vouloit les enlever de force par leur fourrure. Ordinairement, »deux de ces animaux habitués dans une même cage, »vivoient en bonne intelligence: en ajoutoit-on un troisième, »ils se battoient à outrance en grognant et poussant des »cris perçans."

Wallace mentions in his *Malay Archipelago*: »They live »in trees, feeding upon leaves, of which they devore large »quantities. They move about slowly, and are difficult to »kill, owing to the thickness of their fur, and their tenacity of life. A heavy charge of shot will often lodge »in the skin and do them no harm, and even breaking »the spine or piercing the brain will not kill them for »some hours. The natives everywhere catch them by »climbing; so that it is wonderful they have not been

1) That the skins of the *Cuscus*-specimens are extraordinarily thin and tender we know by experience, for nothing is more rare than a skin without cracks, and a well stuffed specimen is an exception because the skin nearly always has lost its extensibility.

»exterminated. It may be, however, that their dense woolly
 »fur protects them from birds of prey, and the islands they
 »live in are too thinly inhabited for man to be able to
 »exterminate them.”

Dr. Mohlike ¹⁾ observes: »Den Tag bringen diese Thiere
 »auf Bäumen sitzend zu, wo Laub und Zweigen sie nicht
 »leicht erkennen lassen. An einigen Orten, wie z. B. auf
 »der Insel Amboina, kommen sie in ausserordentlicher
 »Menge vor und bilden eine Lieblingsnahrung der einge-
 »borenen Bevölkerung. In den Monaten Mai und Juni
 »sind sie so fett, dass häufig, wie ich selbst gesehen habe,
 »bei dem Niedersturze eines aus dem Baume herabgeschos-
 »senen Kuskus auf die Erde, das Fell desselben platzt.
 »Die Zeit wo die Beuterratten am fettesten sind, trifft mit
 »der Reife der Früchte von *Durio zibethinus* zusammen.
 »Alsdann lebt die Bevölkerung von Amboina, wie sich
 »ohne Uebertreibung behaupten lässt, fast ausschliesslich
 »von den genannten Früchten und dem Fleische jener Thiere.
 »Europäer dagegen machen hiervon niemals Gebrauch. Wenn
 »die Phalangisten in sich zusammen gekauert auf einem
 »Baumast sitzen und um Diesen das Ende ihres langen
 »Schwanzes geschlungen haben, erinnern sie einigermassen
 »an Katzen.”

Cuscus orientalis.

1766. *Didelphis orientalis* Pallas. Misc. Zool. p. 59.
 1803. *Phalangista alba* Is. G. St. Hilaire. Catalogue du
 Muséum. p. 148; *Phalangista rufa* I. G. St. H. l. c.
 p. 149.
 1826. *Cuscus albus* Lesson et Garnot. Voyage de la Co-
 quille. Zoologie. I. p. 158. pl. VI.
 1827. *Phalangista cavifrons* Temminck. Mammalogie. T. I.
 p. 17. Pl. I, figs. 7, 8, 9; Pl. II, figs. 6, 7, 8,
 9, 10; Pl. III, fig. 6.

1) Blicke auf das Pflanzen- und Thierleben in den Niederländischen Ma-
 laienländern. 1883.

1846. *Phalangista (Cuscus) orientalis* Waterhouse. Marsupiata. Vol. I. p. 279.
1858. *Cuscus celebensis* Gray. P. Z. S. L. p. 105. Pl. LXII (partim); *Cuscus orientalis* Gray. l. c. p. 104. Pl. LXI.
1860. *Cuscus ornatus* Gray. P. Z. S. L. p. 1. Pl. LXXIV.
1861. *Cuscus (Strigocuscus) celebensis* Gray. P. Z. S. L. p. 319 (with two woodcuts of the skull of a not fullgrown *Cuscus orientalis*); *Cuscus ornatus* Gray. l. c. p. 320 (with two woodcuts of the skull of an adult *Cuscus orientalis*); *Cuscus orientalis* Gray. l. c. p. 320.
1875. *Phalangista (Cuscus) gymnotis* Peters et Doria. Ann. Mus. civ. Genova. Vol. VII. p. 513.
1877. *Cuscus vestitus* A. Milne Edwards. Compt. rend. p. 1080.
1881. *Phalangista (Cuscus) gymnotis* Peters et Doria. Ann. Mus. civ. Genova. Vol. XVI. p. 19. Tav. VIII—IX, fig. 3; Tav. XIV.

Sexes *not* differently colored; a dark band on the middle of head and back ¹). Ears large, produced beyond the fur, externally clothed with hairs, internally naked; a tuft of white hairs near the base of the posterior margin of the earconch. Dental formula: I. $\frac{3}{1}$, C. $\frac{1}{0}$, P. $\frac{3}{4}$, M. $\frac{1}{4}$.

It is a very singular phenomenon that the males of this species have a certain tendency to albinisme. I nowhere found a description or notice as to a white female-specimen. In our large collection embracing a number of ninety individuals there are but ten white specimens and these ten are males. The other males are exactly colored like the females; the dark band on head and back is common to both sexes and to all ages ²), even it is to see

1) Alston (P. Z. S. L. 1878. p. 275) observes: „the dorsal stripe is sometimes absent”. I believe it to be a very constant character and never saw a *Cuscus orientalis* without this stripe (some albinos excluded).

2) Temminck says in his Mammalogie I. p. 18: „Les embryons sont déjà reconnaissables aux indices que fournit la raie unique”.

more or less distinctly in some albinos. The color of the remaining parts of head and back varies from dirty yellow to reddish, reddish brown and brown, sometimes closely spotted or with a few spots, mostly destitute of spots; the underparts are pure white, yellow or reddish. They rarely attain the large size of *Cuscus ursinus* and *Cuscus maculatus*; the females are generally smaller than the males ¹⁾, contrasting with what is rule in the specimens of *Cuscus maculatus*.

The albinos of this species long time have puzzled the naturalists. So Temminck related; »la robe des mâles, même dans le premier âge, est d'un blanc parfait sur toutes les parties; les adultes ont une teinte plus jaunâtre, et les jeunes sont d'un blanc de lait." Waterhouse was of exactly the same opinion. Schlegel wrote in 1857: »the adult males are perfectly white". In 1858 Gray described the male white, the female pale reddish-brown, with a darker longitudinal streak. The same author wrote (P. Z. S. L. 1860): »*Cuscus ornatus* is most like *Cuscus orientalis*, but in that animal the male is pure white." In the following year however Gray asked: »can the white males be an *albino variety*, and confined to the male sexe?" Schlegel ²⁾ endeavouring to solve the question stated: »young and adult females are of a brownish color: the adult males however generally grow pure white: whereas this is a rule in the individuals from Ceram and Amboina, the specimens from other localities present several differences in color and are more or less spotted, the males as well as the females."

At present we know that the white individuals are *albinos* and that they are not restricted to Ceram and Amboina, but independently from locality as we have albinos from Ceram, Amboina, Boeroe, Soela-bessie and Goram, Gray cited albinos from Ceram, Amboina, Waigeou, New-

1) The contrary of what has been observed by Waterhouse: see his Marsupiata. I. p. 280.

2) De Dierentuin Natura Artis Magistra te Amsterdam. 1872. p. 165.

Ireland and New-Zealand, moreover *Cuscus albus* Lesson et Garnot came from New-Ireland.

The question however was settled by François Valentyn long before the birth of Pallas, Temminck, Waterhouse Gray and Schlegel. François Valentyn very exactly described in 1726 this species from Amboina under the name *Coescoes*; he said that sometimes, but always rarely, there are pure white individuals, and these white specimens always are adult males and have red eyes, meanwhile the eyes of the other specimens are blue with a few red round the eye-ball, a. s. o. Valentyn extremely well knew the habits of this species, and its behavior, the way to procure it used by the indigenious, that it is a food, and he described the medical use of tail and claws, a. s. o. Finally Valentyn figured it (very badly). Pallas translated Valentyn's description (Valentyn's book is written in Dutch) in Latin and called the species *Phalangista orientalis*.

Although Is. G. St. Hilaire cited Valentyn and Pallas, it is clear that he misunderstood those authors or perhaps never consulted their works, otherwise he would not have described a white colored specimen as a distinct species (*Phalangista alba*). Moreover he cited »Pallas, Misc. Zool. p. 62, *Didelphis forte africana*», meanwhile on p. 62 there is question of »*Didelphidius opossum* varietas *orientalis* (*Macropus brunii*) from Arou, and I believe that Pallas in his Misc. Zool. nowhere has given a name to an African *Didelphis* (*Phalangista*). Is. Geoffroy's *Phalangista rufa* is a female-specimen of *Cuscus orientalis*, with an excellent description.

Temminck's *Phalangista cavifrons* was called so after the peculiar concave forehead. It is not very clear for what reason Temminck did not accept Pallas' specific-title.

The specimens from St. Cristoval united by Gray with his *Cuscus* (*Strigocuscus*) *celebensis* belong without question to *Cuscus orientalis* as the two woodcuts of the skull demonstrate. Gray's *Cuscus ornatus* is nothing else as the spotted variety of *Cuscus orientalis*: we possess individuals

from Batchan, Morotai and other localities more or less agreeing with Gray's description of *Cuscus ornatus*. The skull figured P. Z. S. L. 1861. p. 321 agrees evidently with other skulls belonging to fullgrown specimens of *Cuscus orientalis*.

Phalangista (Cuscus) gymnotis Peters e Doria is a perfectly adult male of *Cuscus orientalis* as the figures of the animal and of its skull and the description prove. All the differences summed up by the authors are of a mere individual value and we have skulls of *Cuscus orientalis* (adult specimens) from different localities agreeing exactly with the skull of *Cuscus gymnotis*. The number of vertebra and ribs corresponds entirely with that in *Cuscus orientalis*. The three varieties of *Cuscus orientalis* distinguished by Peters and Doria (Ann. Mus. Civ. 1881. p. 681) are in no way bounded to distinct localities as the named author seem to believe; the description of our specimens will demonstrate that the same modification in the coloring appears in specimens from very distant localities.

Prof. Milne Edwards' description of *Cuscus vestitus* from the Karons-Mountains (New-Guinea) is applicable to several not fullgrown specimens of *Cuscus orientalis* in our collection and I do not hesitate in regarding it synonymous with this species.

The skeleton presents 13 costales, 6 lumbares, 2 sacrales and 28 caudales. There are in our collection nine skeletons of adult and young specimens and about sixty skulls belonging to differently aged specimens of the species under consideration. For details see the discussion on page 89.

Hab: Timor (Macklot). Letti (Barchewitz). Banda (Semmelink). Ceram (Forsten, von Rosenberg, Wallace, Teysmann). Saparoea (Forsten). Amboina (Müller and Macklot; Hoedt, Teysmann). Boeroe (Hoedt, Teysmann). Soela bessie (Hoedt, Teysmann). Obi (Bernstein). Halmahera (Bernstein, Museum Genoa). Batchan (Bernstein, Wallace). Ternate (Bernstein, Wallace, von Rosenberg, van Musschenbroek). Morotai (Bernstein). Guebeh (Bernstein). Misool (Hoedt,

v. Rosenberg). Waigeou (Wallace, v. Rosenberg). Salawatti (von Rosenberg). Batanta (von Rosenberg). New-Guinea (v. Rosenberg, d'Albertis, Laglaize). Jobi or Jappen (von Rosenberg, Museum Genoa). Soëk (von Rosenberg). Mefoor (von Rosenberg). Mysore (Museum Genoa). Goram (von Rosenberg). Key-islands (von Rosenberg, Museum Genoa). Arou-islands (Wallace), Wonoembai (von Rosenberg), Gialu Lengan (Beccari). Duke of York-island (Brown). New-Ireland (Brown). Salomon-islands: St. Cristoval (John Macgillivray and T. M. Rayner). New-Zealand (Verreaux, after Gray: see P. Z. S. L. 1861. p. 320).

Valentyn reports that the indigenous name in Amboina is *Coessoe* — the Dutch call it *Coescoes* — a name given by the Malays also to a species of very sharp grass, the seeds of which adhere to the clothes of the passengers: this seed therefore is entitled *woodlouse* (boschluis). Unde nomen.

Lesson and Garnot relate: »nommé *Kapoune* par les nègres insulaires de la Nouvelle Irlande, ce couscous y paraît extraordinairement commun; car les naturels nous en apportaient chaque jour un grand nombre. Il vit sur les arbres; et, malgré le soin avec lequel il s'y cache, une odeur fétide, fragrante et très-expansive, le décèle au loin ¹). Souvent en parcourant les forêts séculaires de cette île immense, l'odorat était vivement affecté par ce singulier animal. M. Cuvier dit qu'en le fixant avec plus ou moins de constance sur la branche où il est cramponné par sa queue, il finit par tomber ²). Ce serait donc de cette manière que les habitants du Port-Praslin prenaient ceux qu'ils nous apportaient journellement à bord, et qu'ils nous vendaient en vie, après leur avoir brisé les jambes, et passé dans la bouche un morceau de bois, afin sans doute de les empêcher de mordre. Les naturels de ce point du

1) Mentioned also by Valentyn, and by Barchewitz (1751) à propos the couscous found by him in the Island Letti (vide Lesson et Garnot).

2) Mentioned also by Valentyn.

monde aiment passionnément la chair très-grasse du cuscus blanc; c'est pour eux un régal délicieux dont ils sont friands, et ils se bornent à faire rôtir l'animal dans sa peau, avec le poil et sur les charbons ardents, après en avoir ôté seulement les intestins. Mais telle est son abondance, qu'ils façonnent avec ses dents de longs chapelets, qui servent à la décoration de leurs armes; ou ils s'en font des colliers et des ceintures, longues de plusieurs brasses."

Teysmann wrote on the labels that it is called *Koesoe tigha* in Ceram and Amboina; in Amboina the albino is named *Koesoe poeti* (*poeti* signifies *white*).

According to Gray, Wallace attached to a specimen of this species the observation: »eats leaves and cocoa-nuts."

Von Rosenberg reports that it is called *Kiedo* in Goram, and further: »es wird vermittelt eines stark klebenden, aus dem Harze eines *Artocarpus* verfertigten Leimes häufig von den Eingeborenen lebend gefangen."

Mounted specimens in the Leyden Museum:

Timor: 1 and 2. Adult males. Macklot, December 1828 and May 1829. Crown of head, nape and back of a chestnut brown, turning in a dirty yellow towards the haunches, the legs, tail and head. Underparts yellowish white. — 3. Adult female. Macklot, Dec. 1828. Like Nos. 1 and 2, but haunches and legs browner, underparts whiter, red round the pouch. — 4. Young male. Macklot, Dec. 1828. The very long and woolly fur of a uniform dirty white color; no trace of a dark line on back or head. *Albino*. — 5. Young male. Macklot, May 1829. Upperparts reddish brown, redder on the haunches and on the tail; underparts dirty white. — 6. Very young male. Macklot, May 1829. Upperparts chestnut brown, underparts whitish.

Banda: 7. Very young male. J. Semmelink, 1880. Upperparts, legs and tail sooty, underparts pure white.

Ceram: 8. Adult male. Pure white. No trace of dark band on back or head. *Albino*. 9. Adult female. Teysmann, 1877. The very woolly hairs of the upperparts chestnut

brown with a silvery tinge, brownish mouse-color towards the legs, haunches and underparts, with the exception of a large patch on the foremost part of the abdomen and breast; this patch is pure white. Tail reddish brown; a circle round the pouch red.

Saparoea: 10. Young male. Forsten. Upperparts, legs and tail chestnut brown, underparts pure white.

Amboina: 11. Adult female. Macklot, 1828. Colored like N^o. 5; red round the pouch. — 12 and 13. Adult females. Hoedt, May 1863 and June 1864. Colored like N^o. 9. — 14. Adult female. Teysmann, 1877. Like N^{os}. 12 and 13. — 15. Adult male. Macklot, August 1828. Like N^o. 4, but hairs short. — 16. Adult male. Hoedt, May 1863. *Albino*; a reddish brown semi-collar at the underpart of neck. — 17. Adult male. Hoedt, October 1863. *Albino*; like N^o. 16, but a slight trace of the dark band on the back. — 18. Adult male. Teysmann, 1877. *Albino*; like N^o. 16. — 19. Not fullgrown male. Teysmann, 1877. Upperparts of a fine brownish silvery tinge, underparts white; a semi-collar like N^o. 16. — 20. Young female. Hoedt, March 1864. Of a darker brown than N^o. 19. — 21 and 22. Half-grown male and female. Teysmann, 1877. Upperparts dark mouse-color; underparts white. — 23 and 24. Young females. Hoedt, June 1863. Like N^o. 9. — 25. Young female. Hoedt, May 1863. Like N^o. 10. — 26. Young specimen. Teysmann, 1877. Colored like N^o. 7. — 27 and 28. Young specimens. Teysmann, 1877. Upperparts reddish, underparts white. — 29 and 30. Young specimens. Teysmann, 1877. Like N^o. 5, but underparts white. — 31 and 32. Very young females. Müller and Macklot, 1828. Colored like N^o. 6.

Boeroe: 33 and 34. Adult and nearly fullgrown males. Hoedt, Sept. 1864. Colored like N^o. 9; N^o. 33 is somewhat redder tinged. — 35. Adult male. Teysmann, 1877. Of the same beautiful color like N^o. 19. — 36 and 37. Adult males. Hoedt, January 1864 and Teysmann, 1877. *Albinos*. A reddish orange semi-collar. No trace of dark line on head or back.

Soela bessie: 38. Perfectly adult male. Teysmann, 1877. Like N^{os}. 1 and 2. — 39. Perfectly adult male. Teysmann, 1877. *Albino*. Semi-collar like N^{os}. 36 and 37. A nearly invisible trace of a line on the back. -- 40. Young female. Hoedt, Nov. 1864. Like N^o. 29.

Obi: 41 and 42. Adult females. Bernstein, July 1862. *Obi besar*: Colored like N^o. 9, but underparts pure white. — 43. Not fullgrown male. Bernstein, 1866. Upperparts of back and tail and outside of legs of a reddish brown grey with a silvery tinge, turning towards the nape to a rich red; underparts reddish white; underparts of tail rich red: on the back a few dark-brown patches. — 44. Not fullgrown male. Bernstein, August 1862. Captured on the top of the mountain in *Obi lattoe*. Upperparts and flanks of a brilliant black chocolate brown; hind-legs less dark; fore-legs, sides of neck and underparts of tail redder; head and tail above brown; hands and feet black; underparts and uppermost part of inner side of legs pure white; white ear-patch inconspicuous. — 45. Adult female. Bernstein, August 1862. Of a reddish chocolate brown; underparts and innerside of legs pure white; a white line occupies the underside of the tail. — 46. Younger male. Bernstein, July 1862. Middle of back brownish yellow; back for the rest straw-colored like head, tail and outside of legs; underparts and innerside of legs white. — 47. Young female, young of the mother N^o. 41. Bernstein, July 1862. *Obi besar*. Somewhat darker colored than the mother; hands and feet black.

Halmahera: 48. Adult male. Bernstein, January 1863. *Kia*. Like N^o. 43, but the dark brown patches are very large and numerous; a small pure white line occupies the middle of the abdomen. — 49. Young specimen. Bernstein, August 1861. *Galela*. Like N^o. 48, but instead of dark patches there are several pure white spots on back, nape and flanks.

Batchan: 50. Adult male. Bernstein, January 1861. Back, flanks and outside of hind legs brownish red,

redder towards the shoulders, nape, head and outside of fore legs; a red semi-collar; tail dirty yellow; underparts white; innerside of legs reddish white; a few pure white small spots are spread on the back. — 51. Younger female. Bernstein, January 1861. Upperparts and outside of legs greenish with silvery tinge. Reddish semi-collar. Tail brown. Innerside of legs and abdomen white. Several pure white spots on back, flanks and upperparts of neck. — 52. Young specimen. Bernstein, January 1861. Like N^o. 7, but on the back a few very indistinctly visible small white spots.

Ternate: 53. Nearly fullgrown male. Bernstein, April 1861. Like N^o. 50. — 54 and 55. Halfgrown males. Bernstein, April 1861. Like N^o. 34; back with a few white spots. — 56. Halfgrown individual. Van Musschenbroek, 1878. Like N^o. 48, but spotted with white instead of with brown.

Morotai: 57. Adult male. Bernstein, 1862. Upperparts, flanks, tail and hind-legs reddish brown, redder towards the neck above and the outside of fore-legs; semi-collar red. Underparts whitish red, the middle of the abdomen and between the fore-legs pure white. *All* the upper- and underparts are densely covered with numerous pure white spots, giving the animal an incomparably magnificent aspect. — 58, 59 and 60. Younger females and male. Bernstein, 1862. Colored like N^o. 9; underparts however reddish; flanks and upperparts ornated with white spots. — 61 and 62. Young specimens. Bernstein, 1862. Like N^o. 7; underparts reddish white; a small line on the middle of the abdomen from between the fore-legs white; a red semi-collar. — 63. Very young individual. Bernstein. Colored like N^o. 5; underparts and semi-collar like N^{os}. 61 and 62; a few nearly inconspicuous small white spots on back and flanks.

Guebeh: 64. Young female. Bernstein, February 1863. Hindparts of back and hind-legs brownish red, fore part of back, nape and crown of head golden red; fore-legs,

underparts and tail reddish white; face, hands and feet greyish.

Misool: 65. Perfectly adult male. Hoedt, May 1867. Like N^o. 41. — 66. Perfectly adult male. Hoedt, June 1867. Colored like N^o. 19. — 67. Halfgrown male. Hoedt, August 1867. Like N^o. 7. — 68. Young male. Hoedt, May 1867. Like the foregoing number; hindpart of back, tail and semi-collar reddish. — 69 and 70. Young male and female. Hoedt, May 1867. Back and nape brownish red; flanks, legs, face and tail reddish grey; underparts white. — 71. Very young female. Hoedt, August 1867. Like N^o. 7, but less dark.

Salawatti: 72. Perfectly adult male. Von Rosenberg, June 1869. Like N^o. 65.

New-Guinea: 73. Very young individual. Frank, 1878. Like N^o. 7; a reddish brown semi-collar.

Jobi or *Jappen*: 74. Perfectly adult male. Von Rosenberg, April 1869. Back of a soft brownish red tinge, redder towards nape, head and fore-legs; a red semi-collar; underparts, hind-legs and tail dirty white. — 75. Halfgrown female. Von Rosenberg, April 1869. Like N^o. 7, but hindpart of back red-brown. — 76. Young male. Von Rosenberg, April 1869. Like N^o. 69; underparts dirty white.

Soëk: 77. Young male. Von Rosenberg, March 1869. Like N^o. 45.

Goram: 78 and 79. Perfectly adult males. Von Rosenberg, September 1865. *Albinos*, with a reddish yellow semi-collar. — 80. Not fullgrown male. Von Rosenberg, September 1865. *Albino*, with a reddish yellow semi-collar and a feeble brownish band on the middle of the forehalf of the back. — 81, 82 and 83. Nearly fullgrown females. Von Rosenberg, September 1865. Colored like N^o. 65. — 84. Halfgrown male. Von Rosenberg, September 1865. Like N^o. 19, but no semi-collar. — 85. Young male. Von Rosenberg, 1865. Like N^o. 5; underparts white. — 86. Very young individual. Von Rosenberg, 1865. Like N^o. 7.

Key-islands: 87. Young female. Von Rosenberg, August 1865. Like N^o. 71.

Arou-islands: 88. Halfgrown male. Von Rosenberg, May 1865. *Wonoembai*. Colored like N^o. 33. — 89. Very young female. Von Rosenberg, June 1865. *Wonoembai*. Upperparts, head, tail and legs of a light reddish brown with a silvery tinge on the back. Underparts white.

Besides the above registered mounted specimens there are several very young individuals preserved in spirits in our collection.

Cuscus celebensis.

1858. *Cuscus celebensis* Gray. P. Z. S. L. p. 105. Pl. LXII (partim).

Dr. Gray described this species (1858) in the following terms: »Ears produced beyond the fur, naked internally. »Male and female alike, ashy-grey, grizzled with silvery »hairs; the nape and the upper part of the middle of the »back blacker, but *without any distinct dorsal streak* ¹⁾.

» *Cuscus celebensis*, Brit. Mus.

» *Hab.* Celebes.

» We have of the species —

1. Young animal, from the *island* ¹⁾ of Macassar; procured from Mr. J. R. Wallace in 1851.

2. Adult male and female, from San Cristoval, *Soloman* ¹⁾ Group of Islands, Dec. 1855. Presented by John » Macgillivray, Esq. and T. M. Rayner, Esq. in 1856.

» The same author wrote in 1860 ²⁾: » *Cuscus ornatus* » differs entirely from *C. celebensis* (*from Celebes* ¹⁾) in the » general colour of the fur, and in having a *distinct streak* » *on the head and back* ¹⁾, somewhat like the streak on the » back of the female *C. orientalis*, but narrower and darker.”

Gray in » Additional observations on the genus Cus-

1) I write this in **Italics**.

2) P. Z. S. L. p. 2.

cus 1)'' said: » *Cuscus* (*Strigocuscus*) *celebensis*, Gray. P. Z. S. 1858. p. 105. t. 62.

» *Hab.* St. Cristoval, *Solomon's* 2) Group of Islands. We » have both sexes in the British Museum Collection, and » the skulls of two others nearly adult, collected by Mr. Ray- » ner and Mr. J. Macgillivray during the voyage of the » *Herald*". There is very little difference between the two » skulls though they are from a male and female animal.

» In the description of the species in the paper above » referred to, the animal is erroneously said, *by a slip of » the pen* 2), to have *no dorsal streak* 2). We have in the » British Museum a young specimen of a *Cuscus* from Ma- » cassar, which is very like *C. celebensis*, but it has *no » visible dorsal streak* 2): it is not in a very good condi- » tion. It may be a variety of this species, or the young » of one of the other, or perhaps an undeveloped state of » a new one".

And in the same paper we read on p. 321: » The other 3) » was sent by Mr. Wallace from Macassar in 1857 and is » a young male. I formerly considered it as a variety of » *C. celebensis* (P. Z. S. 1858. p. 43 4); and it is like that » species in several particulars; but the *want of the dorsal » streak* 2) is a *great peculiarity* 2), which was not so dis- » tinctly seen before it was stuffed."

Every one will agree with me that, without sufficient materials, it may be called hopeless efforts to find and hold the thread in such a labyrinth of bad descriptions, contradictions and inexactness, mixed with a very accidental *slip of the pen* and crowned with a *may be embracing* all the species imaginable!

There are living in Celebes two species of *Cuscus*, viz: *C. ursinus* and a species quite distinct from this and from

1) P. Z. S. L. 1861. p. 319.

2) I write this in *Italics*.

3) Of two young specimens of the genus which Gray was not able to determine with certainty.

4) Not p. 43 but p. 105.

the two other species of the genus and shortly described by Gray in 1858 after a young specimen from Wallace's voyage to Celebes. This species is *without dorsal streak* and has nothing to do with the two specimens from the Salomon-islands (one of the most eastern localities where ever a *Cuscus*-specimen has been found): the latter two have a dorsal streak and belong to *Cuscus orientalis* Pallas. This young specimen from Celebes is the type of *Cuscus celebensis* Gray. In rejecting this specimen in 1861, Gray was obliged to name a *Cuscus* from the very distant Salomon-group, *Cuscus celebensis*! The specimen sent by Wallace from Macassar in 1857 is a young male of the same species and therefore the *want of the dorsal streak* in that specimen is not such a great peculiarity as Gray believed. The year 1851 is somewhat suspect, for Mr. Wallace has been three times in Celebes: twice in Macassar, viz: from Sept. to Nov. 1856 and from July to Nov. 1857, and once in Menado, viz: from June to Sept. 1859 ¹⁾).

Description of the species: No difference in color between male and female. Ears large, produced beyond the very soft fur, naked internally, clothed with long hairs externally, the border of the ear however naked. Upperparts of head and body, outside of legs and the hairy part of tail ashy grey, the hairs being generally silvery tipped; sometimes there is on the back a darker shade, but *never a distinct dorsal streak* ²⁾). Lowerparts of head and body and innerside of legs pure white or with a slightly ashy tinge. All the hairs are long, woolly and very soft to the touch.

1) The Malay Archipelago. London. 1869. It is a pity that we are *in dubio* as to the exact locality where Wallace gathered the specimens. It now is questionable if the species is restricted to Northern Celebes or is spread over the whole island.

2) The figures ♂ and ♀ (plate 62, P. Z. S. L. 1858) probably having been drawn after the two specimens from the Salomon-islands represent not *Cuscus celebensis* but *Cuscus orientalis*. *Cuscus celebensis* is a much smaller and generally less dark colored species. Therefore the figures agree not with Gray's description.

The form of the skull (there are three skulls in our collection) agrees with that of a half-grown *Cuscus orientalis*: concave between the orbits, elevated crests or ridges bordering this cavity like in that species, but the cavity is less deep. The number of the teeth in upper- and lower jaw agrees with that of the same parts in *Cuscus ursinus* and *Cuscus maculatus*; the hindmost upper incisor is nearly as high as the canine; the canine and the anterior upper premolar are separated from each other and from the hindmost incisor and the second premolar by rather wide and nearly equal spaces. The dental formula is: I. $\frac{3}{1}$, C. $\frac{1}{0}$, P. $\frac{2}{3}$, M. $\frac{4}{4}$.

Concluding from the form of the orbital ridges I cannot believe that we possess the fullgrown state of the animal. Our largest specimen agrees in size with a very adult *Pseudochirus albertisii*.

Hab. Celebes: Menado (van Musschenbroek, von Rosenberg, von Faber), Macassar? (Wallace, after Gray).

Mounted specimens in the Leyden Museum:

1, 2 and 3. Fullgrown male and females. North-Celebes, Amoerang. Presented in 1883 by Mr. F. von Faber. — 4 and 5. Younger males. North-Celebes, Menado. Presented in 1878 by Mr. S. C. J. W. van Musschenbroek.

We know nothing about its habits. According to Mr. van Musschenbroek it is called *Temboeng* by the indigenous.

Cuscus maculatus.

1803. *Phalangista maculata* Is. G. St. Hilaire. Catalogue du Muséum. p. 149.

1820. *Phalangista papuensis* Desmarest. Mammalogie, Suppl. p. 541.

1824. *Phalangista Quoy* Quoy et Gaimard. Voyage de l'Uranie. Zoologie. p. 58. pl. 6; *Phalangista maculata* Quoy et Gaimard. l. c. p. 59. pl. 7, et pl. 8. figs. 1, 2, 3, 4, 5¹⁾.

1) Pl. 8, fig. 6 represents the skull of a young *Cuscus orientalis* and not
Notes from the Leyden Museum, Vol. VII.

1826. *Cuscus maculatus* Lesson et Garnot. Voyage de la Coquille. Zoologie. I. p. 150. pl. IV; *Cuscus macrourus* Lesson et Garnot. l. c. p. 156. pl. V.
1827. *Phalangista chrysoorrhos* Temminck. Mammalogie. T. I. p. 12. Pl. I, figs. 4, 5, 6; Pl. III, figs. 1, 2, 3, 4, 5.
1846. *Phalangista (Cuscus) chrysoorrhos* Waterhouse. Marsupiatia. Vol. I. p. 271; *Phalangista (Cuscus) maculata* Waterhouse. l. c. p. 274; *Cuscus macrourus* Waterhouse. l. c. p. 277.
1849. *Phalangista nudicaudata* Gould. P. Z. S. L. p. 110.
1858. *Cuscus brevicaudatus* Gray. P. Z. S. L. p. 102.
1861. *Cuscus (Eucuscus) brevicaudatus* Gray. P. Z. S. L. p. 316; *Cuscus (Spilocuscus) chrysoorrhos* Gray. l. c. p. 317; *Cuscus (Spilocuscus) maculatus* Gray. l. c. p. 318.
1866. *Cuscus maculatus*, var: *ochropus* Gray. P. Z. S. L. p. 220.
1831. *Phalangista (Cuscus) maculata* Peters e Doria. Ann. Mus. civ. Gen. XVI. p. 21.

Sexes differently colored; males spotted, females without spots. Ears short, hidden by the fur, externally and internally densely clothed with long hairs. Dental formula: I. $\frac{3}{1}$, C. $\frac{1}{0}$, P. $\frac{2}{3}$, M. $\frac{4}{4}$.

All the authors writing] on this species have followed Waterhouse and overlooked that Is. Geoffroy St. Hilaire described it, several years before Desmarest wrote, in the following excellent way: »Le Phalanger tacheté. *Phalangista maculata*. *Caract.* Pelage blanchâtre, tacheté de brun; »deux incisives latérales à la mâchoire inférieure. *Descript.* »Pelage des parties supérieures du corps d'un blanc-jau- »nâtre tacheté de brun; les deux dents latérales d'en haut »très-grandes et triangulaires, remplissant presque l'inter-

that of a young *Cuscus maculatus*. This pl. 8 is a copy of Temminck's plate, hence the same mistake (cf. Quoy et Gaimard. l. c. p. 60).

»valle existant entre les incisives et les molaires; oreilles
 »velues à leur intérieur, comme à l'extérieur; les ongles
 »très-petits. *Patrie*. Les Moluques."

This is the first and at the same time a very exact description of a male specimen.

Quoy and Gaimard described and figured a male ¹⁾ from Waigeou, s. n. *Phalangista Quoy* (Desmarest had described the same specimen under the name *Phalangista papuensis*) and a younger male from the same island s. n. *Phalangista maculata* ²⁾).

In »le Voyage de la Coquille" have been described and figured an adult male, s. n. *Cuscus maculatus*, with a very good figure of its skull and a younger specimen, s. n. *Cuscus macrourus* (femelle), both from Waigeou.

Temminck described the female-stage, s. n. *Phalangista chrysorrhos*, after two adult specimens from the Moluccas, and the mode of coloring in the males, adult and young, s. n. *Phalangista maculata*, after individuals from Banda and Amboina. Finally he figured the skull of the fullgrown in several positions. Temminck's figure of the skull of a young *Cuscus orientalis*, which he called that of a young *Cuscus maculatus*, induced Waterhouse to state that in the young of the latter species there are in the lower jaw, between the great incisors and the principal premolar, three small teeth, and in the adult two on either side. As to *Cuscus macrourus* Lesson et Garnot, Waterhouse says, that it would appear that it resembles the young of *C. maculatus*.

A female, two-thirds grown, from Cape York and belonging to the species under consideration has been des-

1) Regarding this specimen Mr. Huet of the Paris Museum kindly informs me: »le *Phalangista Quoyi* est en mauvais état, mais cependant je suis disposé à croire que c'est un mâle, quoique la peau des testicules soit introuvable, d'autre part; il n'y a pas apparence de poche et l'on trouve un petit bouton qui me paraît être l'enveloppe du pénis; pas de renseignements à ce sujet ni sur le plateau ni sur les catalogues."

2) Mr. Huet writes: »Quant au *Phalangista maculata* il n'y a aucun doute. C'est bien un mâle."

cribed by Gould, s. n. *Phalangista nudicaudata*. Gray considered it a good species, but baptized it *Cuscus brevicaudatus* and classified it three years later in his section *Eucuscus*. Four females (of *Cuscus maculatus*) from Ceram and from the South coast of New-Guinea he considered to belong to *Spilocuscus chrysorrhos*; an adult and a half-grown male, both spotted, and from New-Guinea, he brought under the named head with the supposition »that they may belong to *Spilocuscus maculatus*” (and in this Gray was quite right). Two adult males from Waygeroo (Waigeou) and Aru-Island and an adult male and female from Waygeroo (Waigeou) he considered to belong to *Spilocuscus maculatus*.

Under the name *Cuscus maculatus*, var. *ochropus* Dr. Gray described a male (apparently a young male of *Cuscus maculatus*) and a female (exactly agreeing with Temminck's *Phalangista chrysorrhos* and therefore a true female of *Cuscus maculatus*) from North-Australie, Port Albany. That Gray had not the slightest idea of the extremely great variability in the mode of coloring in the individuals of *Cuscus maculatus* may appear to every one who takes the trouble to read the discussion by that author in 1866 (P. Z. S. L. p. 220).

Prof. Peters shortly described (1881) a series of specimens collected by Beccari, d'Albertis and Bruyn from Waigeou, Arou, Key, New-Guinea and from the islands in the bay of Geelvink. I remark that a female collected by Bruyn in Waigeou is colored like the male-specimens.

The unequalled material at my disposal permits to trace in short lines the typical color of male and female; in my summing up of the specimens preserved in our Museum I will endeavour to give a short description of every specimen if need be.

Male. Head, upperparts, clothed part of tail and outside of legs white, irregularly spotted with red, brown or black. Lowerparts and innerside of legs white.

Female. Head, upperparts, sides of body and outside of legs black, brown or red, the hairs always tipped with

white, bright brown or bright red. Clothed part of tail whitish, brownish or reddish, darker towards the rump. Lowerparts and innerside of legs white; brownish or reddish towards the base of the tail and in the region of the pouch. Generally a distinct black band separates the white abdomen from the darker sides of the body.

It must be observed that always the females are larger in size and bigger than the males and that the young males are colored like the adult ones and the young females like the adult females.

A highly interesting and very difficultly explicable fact is, that, meanwhile constantly the males are spotted and the females not, the females living in Waigeou seem to have constantly the coloring of the males specimens. Lesson and Garnot's *Cuscus macrourus* (femelle) from Waigeou is the first exemplar of this kind; Gray enumerated a spotted female from Waygeroo (Waigeou), from Wallace's voyages; Peters cited a spotted female collected by Bruyn in Waigeou; finally in our collection there are two spotted females from Waigeou, collected by Bernstein. It seems that up to this time nobody has been struck by this very surprising phenomenon. A description of the Waigeou-specimens will be found hereafter. A careful comparative study of the skulls of the named specimens from Waigeou in our collection led me into the following observations: the size and shape of the four (2 ♂ and 2 ♀) skulls before me correspond exactly with the size and shape of other skulls of perfectly adult specimens from other localities and in our collection, but the dentition is very peculiar. 1st male, *upper jaw*: the second left molar wants, no trace of follicle, a small interval between first and third molar; *lower jaw*: three small premolars in each jaw. 2nd male, *upper jaw*: between canine and large premolar a very small and acutely pointed premolar¹⁾; *lower jaw*:

1) Cf. the figure of the skull of *Cuscus maculatus* (pl. 4) in „le Voyage de la Coquille.”

right jaw with three small premolars, the hindermost very small and acutely pointed; left jaw with two small premolars. 1st female; *upper jaw*: a small and acutely pointed premolar between the canine and the large premolar on each side; *lower jaw*: right jaw with two small premolars, left jaw with three small premolars, the hindermost being the less developed. 2nd female, *upper jaw*: a small pointed premolar between canine and large premolar, closely crowded to the latter; *lower jaw*: right jaw with four small premolars, the two hindermost exceedingly minute and very closely crowded together; left jaw with three small premolars, the hindermost minute and pointed. The minute size and pointed shape of the superfluous premolars induce me to believe that they are spurious. As the skulls belong to perfectly adult specimens I incline to accept that the apparition of spurious teeth is a peculiarity of advanced age; and this indeed is a very interesting fact as it just is the contrary of what we generally observe in other groups of Mammals.

The skeleton presents 13 costales, 6 lumbarcs, 2 sacrales and 31 caudales. There are in our collection four skeletons (adult and young) and about forty skulls belonging to differently aged specimens of the species under consideration. For details see page 90.

Hab: Saleyer-islands (Teysmann). Amboina (Reinwardt, Hoedt, Bernstein, Teysmann). Banda (vide Temminck's Mammalogie). Ceram (Forsten, Hoedt, Wallace). Poeloe Pandjang (v. Rosenberg). Koor (v. Rosenberg). Tyoor (v. Rosenberg). Key-islands (v. Rosenberg, Beccari). Arou-islands: Wammer, Wokam, Wonoembai. Maykoo (v. Rosenberg, Wallace, Beccari). Salawatti (v. Rosenberg). Misool (Hoedt, v. Rosenberg). Batanta (v. Rosenberg). Waigeou (Quoy and Gaimard, Lesson and Garnot, v. Rosenberg, Bernstein, Wallace, Bruyn). New-Guinea (Macklot and Müller, Jukes, Macgillivray, v. Rosenberg, Beccari, d'Albertis). Mefoor (v. Rosenberg, Beccari and Bruyn). Jobi or Jappen (v. Rosenberg, Beccari and Bruyn). Meosnoom

(v. Rosenberg, Beccari). Schouten-islands: Soëk and Biak (v. Rosenberg, Beccari). Echiquier-islands (Alfred Tetens). Dufour-island (Macgillivray). Australia: Cape York (Macgillivray), Port Albany (Coxen).

According to Quoy and Gaimard this species is called *Rambave* in Waigeou, *Do* in Guébé and *Couscous* in Amboina. They state »il ne paroît pas difficile à prendre, car »les naturels nous en apportoient assez souvent des individus enfermés dans des cages de bambous." As this species bears an indigenous name it is very probable that it is to be found in Guébé, although I never saw a specimen from this locality. Lesson and Garnot relate: »Le »grand phalanger tacheté (*Cuscus maculatus, major*) est »très-commun dans cette île (Waigeou) où les naturels le »nomment *Scham-Scham*. Remarquable par son épaisse fourrure laineuse, blanchâtre, que recouvrent des taches arrondies d'un noir vif; par sa face rouge, ses yeux carmines, enveloppés d'un rebord palpébral lâche; cet animal, »qui n'a point une physionomie agréable, voit à peine pendant le jour, tandisque, au contraire, sa pupille, contractée et verticale sous l'influence de la lumière, se dilate »au soir et pendant la nuit" and that: »plusieurs individus »nous furent vendus par les naturels de ces contrées: nous »essayâmes de les conserver en vie, mais ce fût sans succès. »Leurs habitudes étaient lentes et taciturnes. Ils léchaient »sans cesse la partie dénudée de leur queue, et les mains, »avec lesquelles ils se frottaient presque continuellement la »face. Leurs grands yeux rouges, surmontés d'un épais rebord formé par les paupières, donnaient à ces animaux »une physionomie stupide. Ils buvaient beaucoup, mangeaient du pain, qu'ils prenaient avec leurs mains, préféraient la viande, se battaient avec fureur lorsqu'on en mettait deux ensemble, grognaient comme des chats pour peu qu'on les inquiétât, et cherchaient à mordre, en saisissant avec les mains ceux qui les agaçaient."

After v. Rosenberg ¹⁾ it is called *Wangal* in Arou and

1) Der Malayische Archipel. 1878. p. 361.

Muder or *Medar* in Key and Koor. He further says: »Das Thier kommt nach Aussage der Eingeborenen weder »auf Tyoor, noch auf den Watubella- und Goram-Inseln »vor; auf den Aru-Inseln ist es sehr häufig und wird da- »selbst in verschiedenen Farbenabstufungen angetroffen, »namentlich Grau und Rostbraun, Weiss mit Schwarz und »Weiss mit brandrothen Flecken. Der *Wangal* bringt den »Tag an einem dunklen Ort schlafend zu, wobei er auf »den Hinterfüssen sitzt und mit gekrümmtem Rücken den »zwischen den Vorderpfoten verborgenen Kopf gegen den »Bauch andrückt. Seine Nahrung entnimmt er hauptsäch- »lich dem Pflanzenreich, doch frisst er auch gelegentlich »Nestvögel und säuft die Eier aus. In allen Bewegungen »ist er träge, stützt sich beim Gehen auf dem Schwanz, »gleichsam als auf einen fünften Fuss, ist stumpfsinnig »und bissig und darum schwer zu zähmen. Die Eingeborenen essen das Fleisch gerne.»

The indigenous name in New-Guinea is *Inggairun* or *Inggeinoe*, in Andai *Medunga*, in Jappen or Jobi *Midungjen*, in Misool *Kahpa*¹⁾. Von Rosenberg adds: »Ueberall häufig in variirenden Farbenkleidern.»

The indigenous name in the Saleyer-islands is *Tjem-pāoesan* (Teysmann); in Amboina *Koesoe pontai* (♂), *Koesoe nēla* (♀) according to Teysmann's labels.

Mounted specimens in the Leyden Museum:

Saleyer-islands: 1. Adult male. Teysmann, 1878. The spots are brown on the nape of the neck and foremost part of back, darker towards the rump, chocolate-brown on the legs, reddish on the tail; ears white. — 2. Perfectly adult female. Teysmann, 1878. Exactly colored like *Phalangista chryssorrhos* Temm. (See Mammalogie, T. I. p 13). — 3. Very young female, young of the mother N^o. 2. Teysmann, 1878. Nape of neck, back, flanks, legs and tail of a pretty slaty black, head and ears brownish, lowerparts and inner-side of legs pure white.

1) Der Malayische Archipel. 1878. p. 549.

Amboina: 4. Perfectly adult male. Macklot, Sept. 1828. Colored like N^o. 1. This individual was sent over in spirits and afterwards has been stuffed, therefore the white color turned in a dirty yellow. — 5. Perfectly adult male. Hoedt, March 1863. Colored like N^o. 1, the spots are darker, tail unspotted, head chocolate-brown. — 6. Perfectly adult male. Teysmann, 1877. Like the former; tail near the end of the clothed part with a red spot. — 7. Adult male. Teysmann, 1877. From between the eyes till behind the nape of the neck the hairs broadly tipped with white, for the rest like N^o. 1. — 8. Nearly fullgrown male. Hoedt, Nov. 1866. Face, nape of the neck and spots on legs chocolate-brown, crown of head silvery, for the rest like N^o. 5. — 9. Young male. Teysmann, 1877. Like N^o. 5, but generally more grizzled. — 10. Young male. Hoedt, August 1866. Face, nape of neck, spots on legs reddish brown, crown of head broadly white tipped, spots on back and flanks brown, tail yellowish white. — 11. Very young male. Hoedt, July 1863. The brownish spots on back and legs indistinctly visible, caused by the nebulous tinge of the broadly white tipped hairs. — 12 and 13. Adult females. Reinwardt. Type-specimens of *Phalangista chrysorrhos* Temm. — 14. Perfectly adult female. Teysmann, 1877. — 15. Adult female. Hoedt, Nov. 1863. — 16. Young female. Teysmann, 1877. Nos. 12, 13, 14, 15 and 16 similarly colored. — 17. Very young female. Macklot, Sept. 1828. By the action of spirits in which it has been sent over, the upperparts have turned reddish brown and the underparts, inner-side of legs and tail dirty brown.

Ceram: 18. Adult male. Hoedt, April 1863. The dark spots are so large that it gives the impression as if the back and flanks are black with white spots; face, nape of neck and legs chocolate-brown; breast and tail more reddish with white spots, underparts pure white. — 19. Young male. Forsten. Like N^o. 4, but somewhat redder.

Poeloe Pandjang: 20. Perfectly adult female. Von Rosenberg, Sept. 1865. Colored like Nos. 12 and 13.

Khoor: 21. Young male. Von Rosenberg, Sept. 1865. Colored like N^o. 11, but still whiter; face brownish white.

Key-islands: 22. Perfectly adult female. Von Rosenberg, August 1865, *Great-Key*. Colored like N^{os} 12 and 13.

Arou-islands: 23. Adult male. Von Rosenberg, July 1865, Maykoor. Colored like N^o. 5, foremost part of back grizzled, some red spots on the legs. — 24. Young male. Von Rosenberg, April 1865, Wokam. Spotted with reddish brown, on the hindmost part of the back however with blackish brown spots. Head and tail reddish. — 25. Perfectly adult female. Von Rosenberg, 21 May 1865, Wonoembai. Colored like N^{os}. 12 and 13, but ears and rump golden-yellow, hands and feet red-brown. — 26. Adult female. Von Rosenberg, 27 May 1865, Wonoembai. Colored like N^o. 25, but upperparts and fore-legs whiter. — 27. Young female. Von Rosenberg, 20 May 1865, Wonoembai. Head, back, flanks and outside of legs red-brown, tail yellowish red; no black line separates the red-brown colored flanks from the white abdomen.

Misool: 28. Perfectly adult male. Hoedt, May 1867. All the not white colored parts of a brilliant rich golden color, sooty black on the hindmost part of the back, redder on the hind legs, face, hands and feet. — 29. Halfgrown male. Hoedt, May 1867. Colored like the former, but back less black. — 30. Young male. Hoedt, June 1867. The spots of a dull red-brown, head of a dirty black washed with brown. — 31 and 32. Perfectly adult females. Hoedt, May and June 1867. Back and flanks sooty; face (the face of N^o. 32 is injured and its skull wants), hindlegs, hands and feet of a brilliant golden red; nape of neck, shoulders, fore-legs and tail of a rich golden yellow.

Batanta: 33. Young male. Von Rosenberg, June 1869. Colored like N^o. 30.

Waigeou: 34 and 35. Perfectly adult males. Bernstein, March 1863. Spotted parts of back, flanks, and hind-legs

of a glistening black, of nape of neck and fore-legs reddish black; head and border of ears of a brilliant golden red; spots on tail brown. — 36. Young male. Bernstein, March 1863. Colored like N^o. 11, the spots on tail and fore-legs however with reddish, face brownish red. — 37 and 38. Perfectly adult females. Bernstein, April 1863. Colored and spotted like the males N^{os}. 34 and 35, the only difference being that the spots on the fore-legs and on the nape of the neck are colored like the back. The underparts are pure white; in N^o. 37 however red round the pouch, slightly red in N^o. 38.

New-Guinea: 39. Perfectly adult male. Presented by Mr. v. Musschenbroek, 1878. Of the same splendid color as N^o. 28. — 40. Nearly adult male. Müller and Macklot, August 1828, bay Lobo. Colored like N^o. 22. — 41. Nearly adult male. Presented by Mr. v. Musschenbroek, 1874. Colored like N^o. 4. — 42. Male. Presented by Mr. v. Musschenbroek, 1873, Doreh. The spots are of a very light red tinge, giving the impression as if the animal is entirely white colored. Perhaps an albino. — 43. Adult female. Von Rosenberg, 1870, Andai. Midmost part of back sooty black; head, outer-side of hind-legs, hands and feet brilliant red; four spots on the fore part of the back and the area round the pouch red-brown. Back for the rest yellowish white like the tail and the outer-side of fore-legs; the underparts pure white.

Jobi or Jappen: 44. Nearly adult male. Von Rosenberg, April 1869. Colored like N^o. 29.

Mefoor: 45. Younger female. Von Rosenberg, January 1869. Colored like N^o. 27.

Echiquier-islands: 46. Young male. Museum Godefroy, Hamburg, 1869. Collected by Captain Alfred Tetens. Head, ears, hands, feet and spots on tail and on outside of legs red; spots on back and nape of neck brownish-red. — 47. Adult female. Museum Godefroy, 1869. Collected by Captain Alfred Tetens. Tail injured. Crown of head, nape of neck, back and flanks sooty red; face and legs

red; ears and tail yellowish red; underparts like in other females.

Australia: 48. Young male. Port Albany, Frank, 1867. Colored like N^o. 11, but somewhat darker. — 49. Young male. Salmin, 1867, Cape York. Colored like the former specimen, but face, hands and feet grey.

92. A young female from the Moluccas, labeled *Phalangista ursina* by Temminck. Colored like N^o. 17.

There is in our collection a single young individual from Ceram preserved in spirits.

Cuscus ursinus.

1827. *Phalangista ursina* Temminck. Monogr. de Mammalogie. I. p. 10. pl. 1. figs. 1, 2, 3; pl. 2. figs. 1, 2, 3, 4, 5; pl. 4.

No difference in color between male and female. Ears short, almost hidden by the hairs of the head, externally and internally densely clothed with rather long hairs. For further external characteristics of the species see the detailed descriptions by Temminck and Waterhouse.

Skeleton very stout in proportions: there are 13 costales, 6 lumbares, 2 sacrales and 31 caudales.

The form of the skull agrees much more with that of *Cuscus orientalis* than with that of *Cuscus maculatus*, it is however relatively less broad. The number of teeth in upper and lower jaw agrees with that of the same parts in *Cuscus maculatus*, all the teeth however are stronger developed, especially the foremost upper-, the two anterior lower premolars and the upper incisors; the second upper incisor is not broad like in the other species of the genus *Cuscus*, but very long, nearly as long as the hindmost upper incisor, which has about three fourth the length of the foremost upper premolar. The upper canine is placed exactly between the incisor and the premolar with only small intervals. The dental formula is: I. $\frac{3}{1}$, C. $\frac{1}{0}$, P. $\frac{2}{3}$, M. $\frac{4}{4}$.

Hab.: Celebes: Menado (Reinwardt, von Rosenberg, von Faber).

The well known explorer v. Rosenberg ¹⁾ says that the indigenous name is *Bubutu* and he proceeds as follows: »Es ist kein Nachtthier im eigentlichen Sinne »des Wortes, denn ein von mir lange Zeit in Gefan- »genschaft gehaltenes Exemplar schlief bei Tag nur sel- »ten. Näherte sich Jemand seinem Behälter, so liess es »einen eigenthümlichen schmatzenden Laut hören, wobei »die Unterlippe in eine zitternde Bewegung gerieth. Träge »und bedächtig in allen Bewegungen, sass es öfters in auf- »rechter Stellung auf den Hinterbeinen, nahm die Speise, »die ihm gereicht wurde, mit den Vorderpfoten und brachte »sie damit zum Munde, um sie zu verzehren. Sie bestand »aus gekochtem Reiss, Früchten und Baumblättern. Das »Thier ist ziemlich allgemein in den Wäldern und wird »häufig von den Eingeborenen, welche gern sein Fleisch »essen, in Schlingen gefangen.»

Mounted specimens in the Leyden Museum:

1. Adult male. North-Celebes. Reinwardt. — 2 and 3. Adult females. North-Celebes. Reinwardt. — 4. Adult male. North-Celebes, Menado. Presented in 1883 by Mr. F. von Faber. — 5. Young female. North-Celebes, Gorontalo. Von Rosenberg, 1 July 1864.

Our collection contains three young specimens in spirits, two skeletons of adult individuals and two skulls.

1) Der Malayische Archipel. 1878. p. 268.

NOTE XVI.

DEUX ESPÈCES NOUVELLES D'ÉLATÉRIDES.

DÉCRITES PAR

E. CANDEZE.1. *Oxynopterus Harmseni*, n. sp.

Niger, parum nitidus, glaber; prothorace confertissime et inæqualiter punctato; elytris rufo-ferrugineis, nigro-circumcinctis, apice mucronatis; pedibus rufo-ferrugineis, macula femorum tarsisque nigris. — Long. 55 mill., lat. 17 mill.

Sumatra: pays des Battaks.

Plus svelte que les autres espèces, glabre, peu luisant, noir, avec les élytres et les pattes d'un rouge ferrugineux, les premières étroitement bordées de noir, les secondes n'ayant que les tarses et une tache sur les cuisses, noire. Antennes d'un noir mat, très fortement flabellées (♂) à partir du troisième article qui est muni d'une lamelle aussi longue que les suivants. Prothorax de forme ordinaire, régulièrement mais peu fortement bombé, couvert d'une ponctuation fine, serrée, inégale comme grosseur des points, les angles postérieurs divergents, vaguement carénés, recourbés en arrière à l'extrémité. Ecusson cordiforme. Elytres simples, vaguement et largement sillonnées, aiguës et mucronées au sommet. Dessous brillant sauf les flancs du prothorax.

Le type de ce beau genre, que l'on peut considérer comme très voisin des *Campso sternus*, à cela près qu'il a les antennes fortement pectinées chez les mâles, a été d'abord rencontré à Java et nommé *Elater mucronatus* par Olivier. C'est, ainsi que je viens de le dire, comme une sorte de grand *Campso sternus* non métallique, à antennes

du mâle pectinées, brun, entièrement couvert d'une pubescence fine, longue, soyeuse, jaunâtre, modifiant sensiblement la couleur générale. Cet insecte n'est pas commun.

Plus tard il en a été rencontré dans d'autres îles malaises et même sur le continent, au Camboge, à Malacca. Certaines de leurs particularités assez constantes ont fait considérer plusieurs d'entre eux comme des espèces distinctes. Ainsi ceux des Philippines ont été appelés *O. Cumingi*; ceux de Borneo *O. Audouini*. Je dirais même que le *Leptophyllus Strachani* Hope, pourrait sans inconvénient être réuni au genre indien, qu'il représenterait en Afrique.

Ce n'est pas ici le lieu de discuter sur la valeur des caractères spécifiques de ces vraies ou fausses espèces. Celle que je décris aujourd'hui se distingue bien de toutes les autres, non seulement par sa coloration et surtout celle des pattes, qui est caractéristique, mais par quelques particularités de structure qui me paraissent suffisantes pour la faire aisément reconnaître. Ainsi la pectination des antennes est très longue et forte, et ressemble à ce qui se voit chez le *Leptophyllus Strachani*, africain, le troisième article étant, comme chez ce dernier, aussi longuement pectiné que les suivants: il porte en effet une lamelle longue de 13 millimètres sur $1\frac{1}{2}$ de largeur, ce qui ne se voit chez aucun *Oxynopterus* d'Asie connu jusqu'ici.

Je n'en ai vu qu'un mâle trouvé dans la vallée de Sipiropok, pays des Battaks (Sumatra), par M. Harmsen, à qui je le dédie. L'espèce semble vivre dans les hauteurs, car elle a été rencontrée à une altitude de 3000 pieds.

2. *Lepturoides miniatus*, n. sp.

Opacus, parce pubescens; fronte antennisque nigris, hoc antice excavata, flava, illis serratis (in femina tantum?); prothorace quadrato, tumido, rufo, sulcis plurimis nigris diviso; elytris miniatis, striatis, striis grosse punctatis, inter-

stitiis costiformibus; pedibus nigris basi flavis. — Long. 9 mill., lat. 2 mill.

Japon (Dr. Burger).

D'un rouge de minium mat, la tête et les antennes noires, la première marquée de jaune au devant, le prothorax rouge, sa surface coupée par des sillons longitudinaux et transversaux noirs. Faiblement et peu visiblement pubescent. Antennes fortement dentées en scie, au moins chez la femelle. Prothorax quadrangulaire, fortement ponctué, ses angles postérieurs recourbés en dehors, terminés en pointe aiguë. Ecusson petit, noir. Elytres profondément striées, les stries marquées de très gros points enfoncés, les intervalles étroits et costiformes. Pattes noires, les trochanters jaunes.

Le Musée de Leyde possède un seul spécimen en assez mauvais état de cette espèce, mais elle est tellement distincte que j'ai cru bien faire de la nommer et décrire telle quelle. Au premier abord elle ressemble à un petit *rubens*, mais les fortes stries des élytres et leurs intervalles sont égaux; en outre la ponctuation y est bien plus forte. Sa couleur d'un rouge intense est aussi très caractéristique. L'exemplaire en question a les antennes fortement dentées en scie; il est privé d'abdomen, en sorte que je ne puis en déterminer le sexe; il se peut donc que ce soit une femelle et que le mâle ait les antennes pectinées, comme le *rubens*, dont il est le plus voisin; ou bien que ces dernières soient simplement dentées dans les deux sexes, comme chez le *linearis*.

P.S. Profitant de cette occasion je propose de changer le nom de *Megapenthes agriotides*, donné par moi en 1883 à une espèce de l'île de Saleyer (Notes Leyd. Mus. V. p. 12), en *M. saleyeri*, ayant déjà donné (en 1865) le même nomme à une autre espèce de ce genre provenant de Dorey (Mém. Belg. XVII. p. 31).

NOTE XVII.

THREE NEW SPECIES OF EXOTIC COLEOPTERA.

DESCRIBED BY

C. RITSEMA Cz.1. *Cetonia vetusta*, n. sp.

Length 20 mm., width of the shoulders of the elytra 10,5 mm. — Coppery bronze; above dull greenish brown, the head shining, rather thickly punctured, raised along the middle, the raised streak narrowed between the eyes, and accompanied there by some yellowish hairs; the front margin of the clypeus emarginate in the middle and broadly rounded laterally. — Thorax punctate, the punctures large, rather wide apart on the disk, more closely set on the sides; two pairs of minute white dots are present on the anterior half of the disk. The scutellum elongate triangular, impunctate. — The elytra vaguely punctured, nearly impunctate near the scutellum, faintly rugose at the apex; the apical portion of the suture has on each side an angular keel which is strongly compressed but not prolonged at the end. A few white dots are present on the outer margin, near the suture, and along the middle of each elytron ¹). The pygidium is very scabrous, and shows four small yellowish white dots arranged in a curved line: two on the basal- and two on the hind margin. — Beneath shining; the sides of the breast and the hind coxae densely sculp-

1) The arrangement of these dots is almost the same as in the following species (see plate 4, fig. 4).

tured, the abdominal segments with a row of punctures across the middle and a yellowish white dot in the hind corners; the breast and the femora densely covered with long yellow hairs, the middle- and hind tibiae thinly fringed with similar hairs. The sternum is provided with an impressed longitudinal line, the sternal process strongly porrect, slightly recurved at the tip. The anterior tibiae strongly tridentate, the teeth slightly curved, slender and acute; the intermediate tooth the stoutest. The intermediate and posterior tibiae (especially the former) deeply notched about the middle on the outer margin, forming a sort of tooth at the base of the notch.

A single specimen from Sumatra (Ludeking).

This species belongs to the same group as *C. pilifera* Motsch. from Japan (*Glycyphana pilifera* Motsch. in the Munich Catalogue) agreeing with it in the strongly tridentate anterior tibiae, the deeply notched middle- and hind tibiae, the scabrous pygidium, and the porrect mesosternal process.

2. *Protaetia Hageni*, n. sp.

(Plate 4, fig. 4).

Length (from the anterior margin of the prothorax to the apex of the elytra) about 19 mm., width of the shoulders of the elytra about 11 mm. — Bronzy green; above dull opaque green; clypeus shining, thickly punctured, the sharply upturned front margin faintly emarginate in the middle, the lateral angles broadly rounded. — Thorax rather uniformly covered with minute bristly points, leaving however a narrow streak along the middle as well as the middle of the base free. The anterior half of the disk is provided with two pairs of minute white dots, whereas a similar dot may be observed in the anterior lateral angles. The scutellum is elongate triangular, impunctate. — Elytra covered with minute bristly points which become more

numerous towards the apex; the apex is inconspicuously produced at the suture and blunt. They are moreover provided with some irregular small white dots, especially on the outer margin, and with a short transverse white stria near the suture at the beginning of the depressed portion and one or two others midway between this stria and the apical margin. The pygidium is very delicately sculptured in a transverse direction and provided with short bristles and six white spots: four on the hind margin, and two on the disk near the base. — Beneath shining, the sides of the breast and the hind coxae densely sculptured; the abdominal segments with a few punctures on the lateral margins, and with a double row of yellowish white spots on each side; the breast and the femora covered with long yellowish hairs, the middle and hind tibiae densely fringed with similar hairs. The sternum provided with an impressed longitudinal line, the sternal process much dilated and almost circular at the end. The anterior tibiae with two obscure teeth below the apical one, the middle and hind tibiae notched about the middle on the outer margin.

Two specimens from Nagasariba in the neighbourhood of the Lake of Toba (interior of Sumatra), captured by Dr. B. Hagen during his second journey to that lake. I am much pleased in naming the species after this naturalist, to whose continuous researches in East- and Central Sumatra we owe the discovery of many novelties.

3. *Zonopterus suspectus*, n. sp.

(Plate 4, fig. 5).

It may be that this species is not correctly referred to *Zonopterus*, but I do not see any better place for it.

Length 47 mm., width of the shoulders of the elytra 13 mm. — Dark steel blue, the thorax more blackish, the mandibles and apical portion of the elytra tinted with green; the six apical joints of the antennae, the tarsi (with

the exception of the apical half of the claw-joint), and four large spots on the elytra, forming two broad entire bands, one across the base, the other across the middle¹⁾, luteous; moreover the 5th antennal joint and the body beneath are indefinitely spotted with luteous. A short sericeous pile, — black or luteous, in accordance with the color of the derm, — covers the upper surface and antennae; beneath this pile is light colored all over; the inner margin of the front tibiae is clothed with a luteous pubescence.

The head shining, sparsely punctate, the mandibles²⁾ rather densely punctured; the antennary tubers pointed at the top and separated by a narrow, deep groove, which ends anteriorly in a smooth transverse impression; the under surface of the head is transversely wrinkled. The scape of the antennae finely punctured, slightly curved, widened out at the top on the outside; the 3rd joint is rather strongly curved, twice as long as the 4th, and enlarged at the end on the outside; the 5th joint is a little longer than the 4th, the following joints gradually decrease in length, with the exception of the apical one which is distinctly longer than the 10th; the fore side of the 4th—10th joint is more or less prolonged at the tip. — The disk of the thorax is very shining, extremely finely punctured, strongly convex along the middle, and provided with an irregular rather deep impression on each side; the sides of the thorax are occupied by a large longitudinal callosity which is separated from the disk by a rather distinct groove. Scutellum triangular, inconspicuously punctate, deeply impressed along the middle. — The elytra nearly parallel, broadly rounded at the shoulders and at

1) The latter is deeply and angularly notched on the middle of the hind margin.

2) These are elongate, although not so strongly as in the allied genus *Pachyteria*, which has moreover the clypeus or lowermost part of the face produced so as to form a kind of pedicel for the lip.

the apex on the outside (the sutural angle is narrowly rounded), covered with a very delicate sculpture and some shallow punctures, and provided each with three very faint longitudinal costae. The legs are elongate (especially the hind ones), shining, and sparsely punctate. The femora are subpedunculate, the tibiae compressed; the first tarsal joint of the middle legs is distinctly longer than the two following joints together, that of the hind legs, which is moreover strongly compressed, as long as the three following joints. The prosternum is transversely wrinkled, the metasternum covered with a few punctures, the abdomen impunctate; the hind margin of the apical ventral segment slightly notched in the middle.

A single female specimen from Bandung: West-Java (Sijthoff). — Another specimen from the same locality is in the collection of Mr. J. W. van Lansberge.

P.S. In the 6th volume of the 3rd series of the »Revue et Magasin de Zoologie» (p. 31), James Thomson gives the following short description of another large *Zonopterus*-species:

55. *Zonopterus Grandis*, Thomson. Patria: Malacca. Long. 41 mill. Lat. 11 mill. *Nigro-velutinus*, *pubescens*; *antennae a articulo 6^o flavae*; *clytra maculis flavis 4*; *corpus subtus rufo-brunneum*; *pedes obscure cyanei*; *tarsi flavi*.

Elongatus, subdepressus. *Elytra maculis 2 flavis anticis transversis nec basin nec latera capientibus*, et *maculis 2 flavis post-mediis latissimis ornata*. *Pedes tenue punctati*.

Obs. Cette espèce diffère du *Z. Flavitaris* Hope, non-seulement par la taille, mais encore par la forme et la disposition des taches sur les élytres, et les pattes beaucoup moins fortement ponctuées.

NOTE XVIII.

REMARKS ON LONGICORN COLEOPTERA.

BY

C. RITSEMA Cz.

1. *Eurycephalus maxillosus* Oliv. (Entom. IV, n^o. 67 (1795). p. 52; pl. 20, fig. 147), the *type* of which is in the Leyden Museum, is not the male sex of *Eurycephalus Lundii* Fabr. = *nigripes* Oliv. l. c. fig. 149 (cf. Lacordaire, Gen. d. Coléopt. IX. p. 175, and Cat. Monac. IX. p. 2968) but that of a distinct species, the female sex of which has been described by Mr. Pascoe under the name of *Eurycephalus variabilis* (Ann. a. Mag. of nat. hist. (3). V (1860). p. 120, and Longicornia Malayana. p. 654).

2. *Eurycephalus Wieneckii* Voll. (Tijdschr. v. Entom. XIV (1871). p. 105; pl. 4, fig. 5) from Timor and Sumbawa, omitted from the »Catalogus Monacensis», does not belong to the genus *Eurycephalus* but to the genus *Philagathes* Thoms., as is also the case with *Purpuricenens sanguinolentus* Oliv. (Cat. Monac.).

3. *Apriona tigris* Thoms. (Revue et Magas. de Zoolog. 1878. p. 59, n^o. 80) is not identical with *Apriona punctatissima* Kaup (Einige Cerambyciden der Sammlung zu Darmstadt. 1866. Taf. III, fig. 5) cf. R. Oberthür in Ann. Mus. Civ. di Genova. XIV (1879). p. 572, and A. Lameere, Liste des Cérambycides décrits postérieurement au Catalogue de Munich. 1883. p. 52, but a quite distinct species of which the Leyden Museum contains two specimens from Sumatra (Müller and Sum. Exp.). — *Apriona punctatissima* Kaup is represented in the Museum by a specimen from Sanghir, kindly presented by Mr. R. Oberthür.

NOTE XIX.

ZOOLOGICAL RESEARCHES IN LIBERIA.

A LIST OF BIRDS,

collected by J. BÜTTIKOFER and C. F. SALA

in Western Liberia,

WITH BIOLOGICAL OBSERVATIONS.

BY

J. BÜTTIKOFER.

The readers of the »Notes'' will remember that Prof. Schlegel, in 1881, published a paper¹⁾ about a zoological expedition sent under his supervision to Liberia, on the West Coast of Africa. That paper was, as Prof. Schlegel said, intended to serve as an introduction to the description of new and interesting animals, both those expected and such as were, at that time, already obtained from the expedition, and mentioned a number of valuable mammals and birds, collected during our nine months' stay on the banks of the St. Pauls River.

Since that time, the volumes of the »Notes'' contain a number of papers²⁾ from the hands of Drs. Jentink, Hu-

1) On the zoological researches in West Africa, Notes Leyd. Mus. 1881, p. 53.

2) Dr. Jentink, on a new African bat; on a new squirrel (Vol. III). —

brecht, de Man, Horst, de Marseul, Candèze, v. Lansberge and Heylaerts, in which important parts of our Liberian collections are treated of and several new species described, without exhaustive systematical lists having been given of our collections, sent in during our 2 $\frac{1}{2}$ years stay in Liberia.

This paper now is intended to open, under the general title of »Zoological researches in Liberia'' a series of lists which subsequently will treat of the different groups of our collections, as well as those expected in from Mr. Stampfli, which gentleman has been busy for a year in carrying on our zoological explorations of that little known country.

Before entering upon my subject, I may be allowed to give, as an introduction to the following notes on Liberian zoology, some particulars about the country, especially that part which formed our field of explorations. To make my task more easy, I have adjoined a rough sketch of Western Liberia, showing our different hunting stations and the most important routes taken during our travels through that country (see Plate 6^a).

Liberia, as far as this district is under legal domination of the Negro-Republic, lies between 4° 20' and 7° N. L. and has, along the coast, an extent of about 300 miles. Towards the interior its frontiers are by no means defined, though they are exactly drawn in the map of the

Monograph of the African Squirrels; Revision of the Manidae in the Leyd. Mus. (Vol. IV).

Dr. Hubrecht, on a collection of fishes from the St. Pauls River, with description of three new species (Vol. III).

Dr. de Man, carcinological studies in the Leyd. Mus. (Vol. III). — *id.*, with description of a new species (Vol. V).

Dr. Horst, on two new species of *Acanthodrilus* from Liberia (Vol. VI).

S. de Marseul, a new Afr. species of the Coleopterous genus *Hister* (Vol. IV).

Dr. E. Candèze, a new Afr. species of the Coleopterous family Elateridae (Vol. IV).

J. W. v. Lansberge, description de trois espèces nouvelles d'*Onthophagus* (Vol. V).

F. J. M. Heylaerts, on the exotic Psychids in the Leyd. Mus. (Vol. VI).

Notes from the Leyden Museum, Vol. VII.

Liberian Government. Its south-eastern frontier is formed by the San Pedro River, which separates it from the Ivory Coast while, in the North West, the Manna River separates it from the British Colony of Sierra Leone.

The tolerably straight coast-line consists chiefly of a sandy ridge without any pronounced formation of dunes. This ridge, sloping but slightly downwards on its inner side, is interrupted by numerous rivers and some high promontories, projecting in a more or less western direction into the sea and forming behind their northern slope a kind of bay, which offers a safe anchorage.

The most important promontories are: Grand Cape Mount, 1090' above the level of the sea, Cape Messurado with Monrovia, the Capital of Liberia, 240', and Cape Palmas, the most southern point of Liberia, of about the same height.

Immediately behind the above mentioned ridge begins the swamp region, stretching from three to ten miles into the interior and varied now and then by somewhat elevated grassy plains. The swamp region is intersected not only by the rivers, but by a whole net of creeks, enlarging now and then to more or less considerable pools. At flood-tide a great part of these swamps is covered with water, to which fact is to be attributed the existence of the vast Mangrove-forests which form here nearly the only vegetation.

Farther towards the interior the country rises gradually. The Mangrove-swamps are left behind and give place to a fertile soil, consisting of ferruginous clay, perfectly fit for agriculture, especially for coffee-farming. This region, which becomes more hilly towards the interior, is tolerably thickly populated by natives and Liberians (black settlers from America), which latter have founded their sugar- and coffee-farms by preference on the banks of the most important rivers as far up as they are navigable.

There is, however, a great part of this region still covered with forest and abandoned Negro plantations, as the

natives usually form new plantations in the forest, as they have exhausted the ground.

The mountainous region which succeeds the cultivated range is almost entirely covered with primeval forest and but thinly populated by the natives. Only now and then the traveller, on his wearysome marches through the almost endless virgin forest, reaches an open spot where he is reminded by some miserable looking cabin and the surrounding little farms, that this vast region, many days journey in breadth, is peopled by some isolated natives. Larger settlements and towns are very scarce in this region, and these latter are not seldom fortified with from 2 to 4 high wooden barricades and surrounded by large plantations, where rice and corn, cassavas and sweet potatoes are cultivated.

Behind this large mountainous forest-region begins the table-land or the so-called Mandingo Plains.

Here the forest ceases to predominate and wood becomes, higher up, so scarce that the Mandingo-tribes are obliged to burn cow- and horse-dung instead of it, and to use clay for building their houses and fortifications. Vast grassy plains are varied with rocky hills and well-cultivated fields where, certainly a strange sight to a Liberian, cows and horses, goats and straight-haired sheep are abundant, and where the Elephant, exterminated in the coast-region and very seldom seen in the forest-region, lives in whole herds together.

These vast Mandingo Plains, never visited yet in their upper parts by white travellers, are limited by the Kong Mountains which form the watershed between the Liberian rivers and the tributaries of the Niger.

Amongst the numerous large rivers I will only mention the Manna, Marfa, Grand Cape Mount, Little Cape Mount and the St. Pauls River, the latter the largest of all, and eastward from Monrovia the Junk- and St. Johns River, the River Cess (Cestos), the Sinoe- and the Cavallo River.

Most of these rivers have their origin on the Mandingo

Plains, while the sources of some of them, as is told by the Mandingoes, are to be sought for in the ravines of the Kong Mountains.

In a swift course, repeatedly interrupted and rendered innavigable by rapids and falls, they cross the thickly wooded mountainous region, where innumerable branches with excellent water and larger tributaries join the main river. After having reached the low lands, they flow calmly on to the sea, forming navigable ways for canoes and rowing boats which are, with the exception of the native carriers, the only means of transportation throughout the whole of Liberia.

The extent to which the rivers are fit for navigation is very different. While the last rapids of the St. Pauls River are not farther than 20 miles from the coast, some other rivers, as the St. John and the Cavallo R., are navigable for canoes for 50 miles and more towards the interior.

Like other countries of Western Africa, Liberia has its dry and its rainy season. The former is during our winter, the latter during our summer months. They are separated from each other by short transitional periods with storms and thunder-showers, the so-called tornadoes, occurring in this district about the time of the equinoxes. Notwithstanding there are no distinct limits to the different seasons, it is accepted by the Liberians as a rule that the dry season begins in the latter half of November or in the beginning of December and closes about the end of April. During the months of December, January and February there blows at night a cold dry landwind, the so-called harmattan, and no rain falls. The lower parts of the forests and plains, inundated during the wet season, become dry, the rivulets smaller, the rivers retreat within their banks and their water, during the rains thick and yellow, becomes as clear as cristal. The wet ground produces, on account of the high temperature, an immense quantity of vapor, which especially during the night is condensed by the cold harmattan in the form of mist and

dew in such abundance as to compensate sufficiently the want of rain. It is therefore not strange to meet, during the dry season, but little variation in the appearance of the flora and fauna of the country. The cotton-tree (*Eriodendron anfractuosum*) changes its foliage and stands about a fortnight entirely leafless, and on its newly developed buds feed, during the night, whole flocks of fruit-eating bats.

The grassy plains are frequently set fire to by the natives and a good deal especially of lower animal life is destroyed by the fire. The open sweet-water-swamps become smaller every day and their inhabitants, amongst which some species of fishes, especially of the genus *Ophiocephalus*, bury themselves in the mud at some depth to await, in a state of torpor, the delivering rains. As soon as these swamps are covered with a solid crust, they are visited by Negro-women who know tolerably well the places where fish may be found and make sometimes a good harvest.

Towards the end of February the sky becomes covered with clouds, and rolling thunder leads us every day to expect the long wished for tornado, though our hopes are again and again disappointed. At length, preceded by violent hurricanes, capable of rooting up trees of mammoth-like dimensions, the tornado bursts, the first rain falls. Later on the rains become more frequent till, towards the end of April, they are daily phenomena.

During the month of May the daily showers gradually pass over into the regular fall of the rainy season. Rainless days soon become scarce and the sun, though standing twice, during this season — in April and August — perpendicularly above the country, is hardly able to penetrate the cloudy sky.

Already in March the birds begin moulting, and moulting birds are still to be found in July. During this time they live more retired than ever, so that several species then are scarcely to be obtained. As the plumage of the birds is, during that time, generally imperfect, bird-collect-

ing is, though very interesting, but a thankless task.

The second half of July brings a welcome intermezzo of dry, sunny days, which have but too speedily passed away.

In August the rains set in with double strength and a whole week of continual rain is nothing unusual during this period. The small rivulets, clear as cristal in the dry season, are swollen to rivers, the forest-marshes to lakes, above which brushwood and high forest make a very dreary-looking appearance. The lower forest-regions get inundated by the swelling rivers, and the narrow foot-paths, connecting the Negro-habitations, are for a great deal impracticable.

Towards the end of September and still more in October is again the time of the tornadoes. The thickly clouded sky is cleared up by tremendous thunderstorms and heavy showers, which gradually diminish, during November, into some faint lightnings on the evening sky, and soon the setting in of the harmattan announces the beginning of the dry season.

This second tornado-time is the breeding season of most kinds of birds, which begin building their nests soon after their moulting period. Though breeding birds of the most different genera are found throughout the whole year, the months of October, November and December may be looked at as the general breeding season.

The ordinary temperature in Liberia may tolerably well be compared with that of a European summer, and becomes but seldom what we call insupportable. There is but little difference between the temperature of day and night, much less than on the Mandingo Plains or in the Sahara, where in day-time the ground is burnt by the sun and, during the night, shallow plashes get covered with a crust of ice. In the morning, short after sunrise, our thermometers indicated never less than 76° F., in the midday, between one and two o'clock, from 88 to 90°, and at six o'clock in the evening, just before sunset, 84°.

The highest temperature in the sun we ever stated, i. e. on an open plain, was 115°.

I need hardly to say that such a hot-house-temperature, together with the general climate and the abundance of water, is to produce an extremely rich flora and fauna. An exception from this rule is made by the coast-region whose flora and fauna is generally rather poor. Only the inner slope of the low strand-dune is covered with thorny shrubs and the long creepers of a fine *Convolvulus*. The seashore is visited, during the dry season, by three species of sea-tortoises (*Dermatochelys coriacea*, *Chelonia midas* and *Ch. imbricata*), which bury their globular, parchment-covered eggs in the dry sand at the back of the dune. Large flocks of Sternæ and now and then a pair of *Rhynchops flavirostris* are seen flying above the surf, and but few shells of sea-mollusks, star-fishes and the like are left behind by the retiring tide. Some species of crabs (*Ocy-pode cursor* and *O. africana*) not differing in color from the yellowish gray sand, run quickly along the seashore, while another species, *Grapsus maculatus*, is found on rocks washed by the foaming surf, probably feeding upon different kinds of mollusks, as *Patella*, *Fissurella*, *Hipp-onyx* and *Littorina* with which these rocks are literally covered. The sandbanks before the mouths of the rivers and the banks of rivers and lagunes are, throughout the year, peopled with Alligators (*Crocodilus frontatus*) and Iguanos (*Monitor stellatus*), with flocks of Charadrine and Scolopacine birds, especially *Numenius phaeopus* and *Totanus canescens*, and wild Ducks (*Dendrocygna viduata*), with *Haliaetus angolensis* and, more distant from the water, with *Oedicnemus vermiculatus*.

The large swamp-region and the marshy banks of the rivers, as far as they are influenced by the tide, are covered with impenetrable Mangrove-forests which make, especially when seen from a distant, somewhat elevated point, an exceedingly sinister impression. These Mangrove-forests, where sweet and salt water is mixed together

and where the specific sea- as well as the sweetwaterfauna loose their conditions of existence and decompose as soon as life has left them, are the chief breeding places of the malaria which makes this coast one of the unhealthiest of the whole globe.

The huntsman who accidentally loses himself in such a labyrinth may be glad to find his way out again. He seldom extricates himself, in spite of all his care to climb through the aerial roots, without sinking now and then into a pool of mud, deceitfully covered with a thin blue crust. And after having being turned from his course, notwithstanding the useful compass, by bottomless pools, he is overpowered by a frightful agony, till these poison-breathing pest-marshes are left behind.

Who would, under such circumstances, expect in these pestiferous marshes a rich animal life? And this is nevertheless the case, though they may look very deserted at first sight. The hunter who in his small canoe penetrates the Mangrove slowly along one of those black, narrow creeks, will find the mud literally alive with myriads of larvae of Mosquitoes, Libellulae and other insects, and upon this mud are quickly moving to and fro, in every direction, crabs in a state of lively animation, especially *Sesarma* and *Thelphusa*, climbing along the aerial roots of the Mangrove. On more open places along the creeks we meet hundreds of beautifully colored Jumping Fishes (*Periophthalmus Koelreuteri* which will, at first sight, pass for a larval stage of some Amphibia on account of their manner of living. The aerial roots, hanging into the water along the creeks are, in some localities, covered with whole bunches of Mangrove-Oysters (*Ostrea arborea*).

On the branches of the Mangrove sit *Ceryle maxima*, *C. rudis* and *Halcyon malimbica*, and flocks of green Pigeons (*Treron calva*) are feeding upon the buds of the Mangrove. Farther back we meet with a colony of *Ardea atricapilla*, and the White-headed Stork (*Ciconia episcopus*) and the White Heron (*Ardea alba*) are wading in the shallow water. The higher Mangrove-trees, especially along

larger creeks and rivers, are the roosting-places of the Cormorant (*Graculus africanus*), and above all *Milvus aegyptius* and *Haliaetus angolensis* are wheeling in the air. And as for the larger animals, the Bush-Hog (*Sus penicillatus*) is rooting in the inner edge of the Mangrove-swamp, and at the waterside lies, imitating a dead knotty tree-trunk, a Crocodile (*Crocodylus vulgaris*) in ambush for some Antelope or a Water-Deer (*Hyaemoschus aquaticus*) which may have the misfortune to visit its drinking place.

Directly behind the Mangrove we meet large grassy plains, varied with bosquets of oil-palms and brushwood. The high grass is, during the rains, visited by large flocks of Fringillidae, and *Macronyx croceus* sits on the all over scattered »wild peach-trees” (*Anona senegalensis*). The bosquets are peopled with Nectarinae, two species of *Eurystomus*, with Bee-eaters, *Dicrurus*, *Telephonus* and the splendid *Pholidanthes leucogaster*. During the dry season the grass is commonly burnt by the natives, and the new grass is then visited by Antelopes, buffaloes and wild hogs, which latter are especially fond of the so-called wild peaches, the acrid but nice-smelling fruit of the above mentioned *Anona senegalensis*.

The plantations, especially the rice-fields, are the meeting-places of the most different groups of animal life, both of such as settle there and of others visiting them only as feeding-places. During the night they are visited by Buffaloes (*Bos brachyceros*) and Antelopes, especially the so-called »Red Deer” (*Tragelaphus scriptus*) and, though very seldom, by a family of Chimpanzees. Several species of Monkeys, above all of the genus *Cercopithecus*, come there in the early morning and late in the evening, while the more phlegmatic species of *Colobus* hardly will leave the lofty treetops of the primeval forest. Large fruit-eating Bats are fond of sweet bananas, soursops and Mango-plums, while the insectivorous kinds keep the vicinities of the Negro-habitations.

Ground-Hogs (*Aulacodus swinderianus*) and Ground-Squir-

rels (*Nerus erythropus*), the first living, like bares, in nests upon the ground, the latter in holes which they have dug in the ground, live on cassavas, potatoes and the sweet ground-nuts (*Arachis hypogaea*). The rice-farms are visited by large flocks of weavers and other genera of Passerine birds, which form a real plague to the owners of the farms, about the time when the harvest approaches. Birds of pray, much more seldom in the country than could be expected, are, excepting the common *Milvus aegyptius*, very thinly spread over the cultivated regions. Only occasionally a pair of the rare *Baza cuculoides* is met there, and at night-time we hear now and then the sad voice of *Syrnium nuchale*. Whole clouds of Bee-eaters (*Meropops albicollis*) are swarming about, while another species (*M. erythropterus*) keeps close to the ground, picking up running beetles and other insects. *Eurystomus gularis* and *E. afer* are sitting lazily on isolated twigs on the edge of brushwood, while restless Nectarinae are swarming around flowering shrubs, where their artificial pendular nests are fixed to the ends of twigs.

Along the ground and through the lower branches of the brushwood runs the beautiful *Pitta angolensis*; the skirts of the neighbouring forest are peopled by different genera of singing birds, as *Turdus*, *Cossypha*, *Criniger*, *Andropadus*, *Pycnonotus* and *Cysticola*, while the more open places are inhabited by *Motacilla flava*, *Anthus gouldi*, and small flocks of *Vanellus inornatus*.

Reptiles are very numerous in this district, and poisonous snakes, as the dangerous *Vipera rhinoceros* and *V. nasicornis*, *Naja atropos* and *N. rhombeata*, as well as two species of *Agama* and several species of *Scincus* are not seldom met with, while amongst those which live under the surface of the ground, must be mentioned the genera *Typhlops*, *Ophioproctus* and *Caecilia*. Toads and frogs are also very numerous, especially tree-frogs, which are represented by a large number of beautiful and interesting species. The insect life is tolerably rich in the cultivated

region, though it gets much reduced by the myriads of the so-called drivers and two species of *Termes* (*T. mordax* and *T. bellicosus*).

Quite another aspect offers the great virgin forest that we enter after having left the cultivated district. A moist hot-house-air strikes us here, a smell of mouldering wood, of dead leaves and other decaying substances. There stands, in a mysterious twilight, before us a scene grander than we saw before, a wild chaos of gigantic trees, smaller trunks and underwood, intertwined by a labyrinth of lianas and other creepers; half decayed trunks of mammoth-like dimensions, and above them others, prevented from falling down by neighbouring trees and the iron strength of a whole net of lianas; here a gigantic tube of twisted lianas, which latter, fastened to the branches of surrounding trees, indicate the place where a tree, embraced to death, has decayed in an erect position. And above all there spreads a foliage so dense that the rays of the sun cannot penetrate to the ground. One of the greatest attractions of this primeval forest is the huge Silk-cotton-tree (*Eriodendron anfractuosum*), the trunk of which reaches a circumference of 30 to 40 feet and which spreads out his tremendous crown at a height of 80 to 100 feet. Below the foliage of this high forest par excellence, stands a forest of second rank, a forest in the forest, and in this latter is developed an impenetrable labyrinth of smaller trees and underwood, interwoven by innumerable creepers, which render free motion by man impossible. Only cutlass in hand is the huntsman able to force his way through these thickets and will find the way back easily enough by the cut-off twigs and marked trees.

The marshy places are covered with gigantic Aroidea and Iridea of the most splendid white color and a fragrant smell. Beautiful white waterlilies and other aquatic plants delight the eye of the traveller, who has to cross, on long, half decayed bridges of sticks of the most original kind, the so-called monkey-bridges, these elegiacal forest-swamps.

Imagine now, that the crowns of trees are peopled with whole troops of monkeys, belonging to the genera *Colobus*, *Cercopithecus*, *Cercocebus* and *Nycticebus*, with numerous squirrels, with noisy hornbills, several species of birds of pray, pigeons and doves, plantain-eaters, parrots, woodpeckers and barbets, and whole flocks of the most different kinds of smaller birds; imagine the ground of these forests inhabited by buffaloes and antelopes, a family of Chimpanzees, an occasional old Elephant, a small Hippopotamus (*H. liberiensis*), a troop of wild hogs (*Sus penicillatus*), a Leopard or a Tiger-cat, lurking near a well for an antelope; by Viverras, porcupines, bush-rats (*Cricetomys gambensis*), beautifully spotted and striped mice of different kinds, three species of Manidae, by Guinea-fowls, Francolins and the curious *Agelastes meleagrides*, by poisonous snakes, and finally by myriads of wild bees, termites, ants, whirring cicadas and the like. Imagine these forests crossed by narrow foot-paths along which a caravan of singing and shouting carriers are removing the baggage of the white traveller to another place, and now and then an open spot with a little farm or a village with some dilapidated clay- and bamboo-huts; imagine these forests traversed by a large river full of rapids and rocky islands which, during the rains, disappear under the surface of a thick yellow stream — and on the bank, hidden by overshadowing trees at the foot of a roaring waterfall, a simple hut of palm-leaves, with one side entirely open. On the ground in the middle of this hut a little fire, along the three walls cases, boxes, guns and other hunting materials, nets, angling-rods, a large case used as a table and some smaller ones and an Elephant's skull as chairs; some hammocks hanging from the roof, where the inhabitants of the hut take, entirely dressed and armed, their short night's rest, and before the hut, at the waterside, a solid raft of roughly hewn tree-trunks, always ready to drift down the river in time of danger and then you have got a tolerably clear

idea of our hunting grounds, the scene of our nine months' stay at Bavia and Soforé Place, on the banks of the St. Pauls River.

It was on the 8th of January 1880 that my companion C. F. Sala and I landed at Monrovia, the Capital of Liberia, and were kindly received by the Dutch Consul, Mr. Wigman and his Assistant Veldkamp as well as by the Liberian Authorities, to whom we were recommended by the Dutch Government. As the dry season was already much advanced, we prepared with the greatest speed for our first excursion to the interior, for which I selected the forest-regions along the St. Pauls River, notwithstanding the warnings of our new acquaintances who told us no good about the character of the native tribes, especially of the Golahs, who inhabit the banks of this river. After a nine days stay at Monrovia we left this place in a boat belonging to the Dutch factory, manned with about 10 Kroo-boys, and reached, by the Stockton Creek and the St. Pauls River, long after sunset the Station of Mr. Day, an American Missionary at Mühlenburg Mission near the first rapids.

As the river is, on account of its numerous rapids and falls, not navigable beyond Mr. Day's station, we engaged, with the aid of Mr. Day, a sufficient number of carriers and proceeded to Bavia, a small Golah town on the right bank of the St. Paul, about four hours march from Mühlenburg, through primeval forest, which began shortly after we had left the mission.

Here we staid till the end of March. The whole river was, at that time, covered with rocky islands and banks, the abode of *Glareola megapoda*. A small canoe, which afterwards got lost in a waterfall, enabled us to visit these islands and the forests on the opposite bank. Except some farms, belonging to Bavia and the surrounding so-called half-towns, the whole country was covered with high forest.

After having explored this district, we removed to Soforé Place, a good days walk higher up the country. We had much trouble in getting a sufficient number of carriers, as the chief of Bavia was not willing to let us move so soon and we, therefore, were obliged to order carriers from Soforé Place, which I had visited some time before on a hunting excursion.

At Soforé Place, also on the right bank of the river, we staid from the 1st of April till the 15th of October. The country round this place was still more mountainous than at Bavia, and the river full of rapids and waterfalls. Large islands, densely covered with forest, divided the river into several arms.

This country still belongs to the Golah-tribe, while the left bank of the river is inhabited by the Pessy-people. Notwithstanding the rainy season had set in, we explored this country in every direction, and many long excursions were made, before we had to stop them on account of the advance of the rainy season and the hostilities of the natives. Hunting was very fatiguing in these forests, and many places really inaccessible on account of the numerous sweetwater-swamps. So we found, in the vicinity of Soforé Place, the tracks of an Elephant, which the natives told us was the only one in whole the neighbourhood. It had its head-quarters on one of the large islands of the river, which it crossed swimming and extended its ramblings sometimes very far on both sides of the river. Although there were some experienced Elephant-hunters at Soforé Place, this old specimen was too cunning for them and always succeeded in escaping their pursuit. Elephant-hunting is a very peculiar kind of sport amongst the natives. The Elephant-hunters, who make long trips through the country especially farther up where the immense forest-region is bordered by the Mandingo Plains, are armed with a long-barreled flint-gun and a bundle of longshafted iron spears, the shafts of which are adapted to the barrel of the gun instead of a ball. The Elephant, after having received one or

more of these missiles, rushes on through the forest, breaking off the shafts of the spears which latter, on account of their heads being broader in front than behind, stick fast in his body.

The Elephant soon after falls down from loss of blood and is easily found by the hunters, who follow him at their leisure, cut out his tusks with axes and smoke his flesh after having cut it into long strips.

The St. Pauls River and its tributaries, like all Liberian rivers, excel in delicious fish and a species of craw-fish (*Palaemon macrobrachion*). The fish-fauna is richly represented by different species of *Chromis* and *Hemichromis*, *Mormyrops*, *Notopterus*, *Eutropius*, *Alestes* and *Brachyalestes*, *Clarias* and, together with the latter, *Malapterurus electricus*, more abundant in slowly running muddy bush-creeks than in the main river. During the rains fishing is stopped entirely, as there seems to be no possibility of being repaid for the trouble. As soon, however, as the dry season has set in and the water runs off, the natives build weirs of lattice-work across the creeks, provided with large fish-baskets to catch the fish which come down with the falling water. Other fences, sometimes of great dimension, are built along the rivers in the shallow water near the banks. They have a trap-door at the waterside, by which the fish enter the trap, attracted by some bait which is in connection with a catch. As soon as the bait is touched by the fish, which enter sometimes in large shoals, the trap-door, weighted with a heavy stone, falls down and the fish are caught.

Another inhabitant of the rivers is an otter, about of the same size and color as our *Lutra vulgaris*, which, in spite of all our painstaking, never could be obtained, as it is almost impossible to approach noiselessly the banks of the rivers. A young live specimen, offered to me for sale, had badly mutilated tusks and so exorbitant a price was asked that I declined to purchase it. Another inhabitant of the rivers is the Lamentine (*Manatus sene-*

galensis), the Malentine of the Liberians, which, however, does not proceed farther up the rivers than the first rapids.

The rains prevailed with an unusual violence during our stay at Soforé Place, and during the months of August and September all connection with Mr. Day and the Coast was cut off. Certainly we had moved, in the dry days of July to another place higher up the river, which I had chosen as a new station on a trip to the inner edge of the forest region, a place, where every kind of food could be procured.

Sickly, however, the cunning headman of Soforé Place and brother of the powerful Golah-king Fân Quehqueh, did not like to let us depart, as we resembled in his hands an orange which he never got tired of squeezing out anew. In vain I tried to get carriers from the Boozies, a tribe amongst which we intended to take up our abode; they were too anxious to keep peace with the warlike Golahs to procure us the needful number of carriers.

The dry days of July were wasted in continual palavers and before we were aware of it, the rains had set in again with such a violence that we were obliged to stay.

About the 15th of October we were enabled to return by the intervention of Mr. Day who sent us carriers who, however, not being sufficient in number, were supplemented by people of Sickly. The carriers of the latter plundered our baggage on the way to Mr. Day's, without our being able to prevent it. Happily enough, our collections reached Monrovia safely and were directly packed and shipped for Europe.

From Monrovia we removed by sea, on board a cutter belonging to the Dutch factory, to Robertsport, a Liberian settlement at Grand Cape Mount, about 45 miles west from Monrovia, where we were kindly received by our old acquaintance Mr. Veldkamp and by the American Missionary the Rev. Mr. Grubb and his wife, as well as by Mr. Watson, the Superintendent for this place.

Grand Cape Mount is by far the most important promontory of the whole Liberian coast, and entirely covered with virgin forest. Its shadowy valleys are animated by beautiful noisy rivulets of the coolest and most excellent drinking water in Liberia. On its western slope, which projects pretty far out into the sea and thus forming a fine large bay, is situated the Liberian settlement of Robertsport, and on a terrace, far above this settlement, the American Missionary Station, with an unrivalled view over the open blue sea, the marshy estuaries of the Sugary, Marfa and Grand Cape Mount River, covered with Mangrove, oil- and wine-palms and crossed in all directions by numerous creeks, and eastward over the Fisherman Lake with the vast forest-region of the interior and a background of blue mountains in the distance.

The Fisherman Lake at the northern foot of the Mountain, as the promontory is called there, is the jewel of Grand Cape Mount Country. It is about 10 miles in length and from 3 to 4 miles in width, growing narrower at its lower western end, and forming the Grand Cape Mount River, which connects it with the bay of Robertsport. Its tributaries are numerous fresh-water-creeks, the most remarkable of which are the Morfi River and the Jonny Creek. During the wet season its blue, clear water is, on account of the immense supply of rain-water, perfectly sweet but gets salt towards the dry season and becomes then so shallow as to be hardly navigable except by small canoes.

The fauna of the lake depends much on the seasons, as during the rains only sweet-water-fishes are found, while in the dry season thornbacks, soles and other sea-fish are caught.

The Vey-people which inhabit this country, are very fond on fishing, which is performed in the most various ways. Women fish in the shallow water along the shore with small nets, while the men prefer to fish on moonless nights by the light of torches, made from palm-leaves, and armed either with the cutlass or with a long-shafted

spear, which is thrown violently and with extraordinary skill from out the canoe at their victims, as fish, crawfish, crabs, bullfrogs (*Rana occipitalis*) and toads (*Bufo pantherinus*) during their stay in the water. On the other hand the natives are not very fond of angling, except the Kroo-men, who are fisherman by predilection and supply the inhabitants of the coast-places almost daily with a larger or less amount of fresh sea-fish.

After a two days stay with Mr. Veldkamp at the Dutch factory I decided to make a stay during the dry season on the banks of the Fisherman Lake and selected upon the advice of the Rev. Mr. Grubb the Vey-town Bendo as our first station. As we bought, at the expense of four dollars, the friendship of Barlah, »the king of the lake”, we were not ill-treated by the natives of this country, who were moreover much better-natured than their neighbours, the Golah tribe.

From Bendo we removed after a short stay to Buluma, likewise situated on the northern shore of the lake, from which place we explored the country in every direction. During this time I was fortunate enough to visit Cobolia, the residence of the Vey-King Marana, on the Marfa River.

The country round the lake offered a great variation of open water, creeks, sweet-water-swamps, large plantations, abandoned farms, vast grassy plains and hilly land, for a great deal still covered with primeval forest. Here we enriched our collections with a number of interesting animals amongst which the rare *Colobus polycomus*, the water-deer (*Hyaemoschus aquaticus*) and the sea-cow (*Manatus senegalensis*), the rare *Baza cuculoides*, *Numida cristata*, *Francolinus ahantensis*, *Vanellus inornatus*, *Lobivanellus albiceps*, *Ardea leucolopha* and *A. leuconotus*, *Ibis Hagedash* and *Plectropterus gambensis*. Amongst the reptiles was *Crocodilus vulgaris*, *C. frontatus* and a fine series of snakes, and amongst the fishes some interesting swamp-fishes, as *Clarias* and *Ophiocephalus*. We made in addi-

tion a nice collection of molluscs, crustacea and insects.

A great impediment was the sickness of my friend Sala, which at last obliged me, in order to procure him more comforts. to remove to Robertsport where we arrived on the 20th of April. There his health became worse every day until he died after long sufferings on the 10th of June 1881, the evening before he was to be brought by a Dutch vessel to Monrovia and eventually to Europe. He is buried in the grave-yard of the American Protestant Episcopal Mission at Robertsport.

After this sad event I kept my headquarters fixed at Robertsport. From here I made several long excursions and temporary stays in the interior. So I resided some time at Coro and Fali, two strongly fortified native (Vey) towns near the frontiers of the Golah Country, and at Caba and Sauwira on the Marfa River. After there was no possibility of staying any longer there on account of a violent native war, I removed to the southern slope of Grand Cape Mount. There I lived with my Liberian huntsman Jackson Demery and two servants in a tent in the midst of the virgin forest and called this place on account of our living quietly far from the noise of human habitations Travellers Rest.

But my health was broken, strength was gone and my legs were continually covered with ulcers so that, the last few months of my stay in Liberia, I was obliged to keep my bed. Seeing that there was no possibility of recovery in this climate, I left Liberia at the end of April 1882 for Europe, though only, as I thought then, for a few months. Here I found that I needed much more time to recover entirely and that I should probably never again become strong enough for that unhealthy climate. Moreover Prof. Schlegel died during my stay in Holland and I happened to awaken in Mr. Stampfli, an experienced Swiss huntsman and old acquaintance of mine, an interest in that district. He has now carried on for about a year, our zoological researches and is exploring at this moment,

from his head-quarters at Schieffelinsville, eastward from Monrovia, the valley of the Junk River and its tributaries.

It is not my intention to point out here the importance of Liberia as to the geographical distribution of animals, the following lists being sufficient to effect this task. I only wish to call attention to some of the most striking facts which show that there is a certain difference between the fauna of the lower coast-regions and that of Liberia, though I am unable to show the place where this line of demarkation is to be sought for. As I hope Mr. Stampfli or some other naturalist will proceed farther down the coast and also throw light upon the zoological condition of the Ivory-Coast. Certainly the fauna of the country explored by us has much more connection with that of Sierra Leone than with that of the Gold Coast. Instances of animals, not going farther down than Liberia and such found hitherto only in this latter country are *Colobus ursinus*, representing *C. vellerosus* of the Gold Coast, *Colobus polycomus* and *Cercopithecus callithrichus*, from the Senegal to Liberia, *Antilope (Cephalophus) doria* and *A. sylvicultrix* found with certainty hitherto only in Liberia and the interesting *Hippopotamus (Choeropsis) liberiensis*. Something similar is the case with a number of birds, though whole groups, for instance all the eight species of Liberian Hornbills, are also met with on the Gold Coast down to the Gaboon. *Psittacus timneh* is the Liberian representative of the common *P. erythacus* which does not occur beyond the western boundaries of the Gold Coast, and the same thing is the case with *Agapornis swinderniana*, which represents the common *A. pullaria*.

On the other hand, there are some birds, for instance *Halcyon badia* and *Columba univincta*, which had hitherto been found both in Liberia and at the Gaboon, without having been met with in the intermediate regions. This peculiarity however need not lead to the conclusion that these birds will only inhabit the above mentioned coun-

tries and most likely future investigations may prove that they also inhabit the intermediate regions.

In the following lists will be mentioned only the specimens belonging to the collections of the Leyden Museum, the rest being sent to Mr. Schlüter, the well-known German dealer in objects of natural history at Halle, exclusively charged with the distribution of our duplicates. The same will be the case with the duplicates, expected in from Mr. Stampfi.

In my list of birds I have, with a few exceptions, followed the classification accepted by Dr. Hartlaub in his *Ornithologie West Africa's*. As I had interleaved and completed it, before my departure, with recent publications and annotations concerning the Ornithology of Western Africa, this most valuable book has rendered me exceedingly good services during and since my stay in Liberia.

I cannot close this introduction without mentioning Mr. Schweitzer, who was sent to Liberia by Dr. Dohrn at Stettin, especially for collecting molluscs and insects. He staid in Liberia from 1875 to 1877, and explored the country north-east from Mourovia, especially along the Messurado- and the Junk River. Besides an important number of partially new molluscs and insects, the latter published in the »Stettiner entomologische Zeitung» (1875 to 1878), he sent over mammals and birds. Amongst the mammals were very rare ones, as *Colobus polycomus*, *Antilope sylvicultrix* and *Hippopotamus liberiensis*, all three acquired by the zoolog. Museum at Berlin. As to the birds I do not know whether a complete list has been published somewhere or not. Two new species (*Laniarius melamprosopus* and *Turdirostris rufescens*) are described by Dr. Reichenow in the *Journ. f. Ornith.* 1878, p. 207. *Agapornis swinderniana* is, as Dr. Hartlaub writes in the *Ibis*, 1879, p. 84, rediscovered by Mr. Schweitzer in Liberia, who collected ten specimens of this long years in vain sought for species.

LIST OF BIRDS.

Syrnium nuchale.

Syrnium woodfordi (part.), Hartl. Orn. W. Afr. p. 21.

Syrnium nuchale, Sharpe, Ibis, 1870, p. 487. — id. Cat. Birds Br. Mus. II. 1875, p. 265.

Hab. West Coast of Africa, from the Senegal to Angola, where it represents *S. Woodfordii*, Smith, from the Cape.

One specimen (young male) from the vicinity of Monrovia, received in the beginning of April. Having bought the bird alive from second hand, I cannot give any communications about its habits.

Iris, bill and toes yellow.

It is very remarkable that, notwithstanding no pains were spared to get hold of the Liberian owls, we were not able to get a single one, except the above mentioned specimen, and therefore I must fully agree with other naturalists, that generally Owls are very scarce in the tropical parts of Western Africa.

Circus macrourus.

Circus macrourus, S. G. Gmel. N. Comm. Petrop. XV. p. 439, pls. 8 & 9. (1771), teste Sharpe, l. c.

Circus swainsonii, Smith, S. Afr. Q. Journ. I. p. 384 (1830). — Hartl. Orn. W. Afr. p. 16. — Schl. Mus. P.-B. Revue Accip. p. 49.

Circus macrurus, Sharpe, Cat. Birds Br. Mus. I. p. 67.

Hab. The whole of Africa, South of Europe and Asia.

Two full-grown young males, killed in November at Grand Cape Mount. The few specimens I have met with were all young birds. I have never seen this species far off from the coast and think it will hardly be found in the Interior. They are very fond of young chicken and visit every day at the same hour their regular feeding

places, sweeping along the ground in search of mice and small reptiles.

Iris yellow, cere and legs orange yellow.

Spizaetus bellicosus.

Falco bellicosus, Daud. Traité, II. p. 38 (1800).

Spizaetus bellicosus, Hartl. Orn. W. Afr. p. 5. — Schl. Mus. P.-B. Revue Accip. p. 59. — Sharpe, Cat. Birds Br. Mus. I. p. 265.

Hab. South and West Africa.

Only one young specimen of this beautiful Hawk-Eagle was obtained during my stay at Robertsport, which was told to me was brought alive from the Interior.

I have never seen this bird in wild state, and as I hardly can suppose that such a large bird might have slipped my attention, there is no doubt of its being very rare in the district we explored. My huntsman Jackson Demery told me he had shot the Hawk-Eagle several times in the Gallinas Country, West of the Manna River.

Iris, cere and feet yellow.

Astur monogrammicus.

Falco monogrammicus, Temm. Pl. Col. I. pl. 314.

Astur (Micronisus) monogrammicus, Hartl. Orn. W. Afr. p. 13.

Astur monogrammicus, Schl. Mus. P.-B. Revue Accip. p. 67.

Asturinuia monogrammica, Sharpe, Cat. Birds Br. Mus. I. p. 275.

Hab. Western and Eastern Africa.

One adult female, killed at Buluma, Fisherman Lake.

A very shy bird, that seldom is met with in open country.

Iris brown; base of bill and cere orange red; feet red.

Nisus hartlaubii.

Nisus hartlaubii, J. Verr. in Hartl. Orn. W. Afr. p. 15.

Accipiter hartlaubii, Sharpe, Cat. Birds Br. Mus. I. p. 150, pl. 6, fig. 2.

Hab. Liberia, Gold Coast and Gaboon.

One female specimen from Soforé Place, St. Pauls River.

The only specimen we procured in Liberia agrees perfectly with the description given in Hartlaub, Orn. W. Afr. Zusätze p. 269, except cere and legs, which are red, like in *N. erythropus* Hartl. instead of orange, resp. yellow, as they ought to be according to the above mentioned description.

In its manners it is a true Sparrow Hawk.

Total length 25 cm., wing 16,5 cm., tail 12,8 cm., tarsus 4,5 cm., middle toe 2,8 cm. — Iris yellow.

A careful comparison of this bird with our type specimen of *N. erythropus* Hartl. (*N. minullus* Schl. Rev. Cat. Accip.) offers no striking difference except the color of the under surface, and, as soon as ornithologists will have a sufficient material at their disposal, both these species might have much chance to be united under the name of *N. erythropus* or perhaps, as did the late Prof. Schlegel in his Revue Cat. Accip. together with the third very closely allied species, *N. minullus* from Southern Africa.

Nisus macrocelides.

Astur macrocelides, Hartl. J. f. O. 1855. pp. 354 & 360;
— id. Orn. W. Afr. p. 12.

Astur (Micronisus) zonarius, Hartl. Orn. W. Afr. p. 15.

Nisus unduliventer, Schl. (nec. Rüpp.), Mus. P.-B. Rev. Accip. p. 96.

Astur macrocelides, Sharpe, Cat. Birds Br. Mus. I. p. 100, pl. 3.

Hab. Liberia, Gold Coast, Gaboon.

Two young specimens were procured at Soforé Place (male) and at Buluma (female).

These birds are met with in small families of 3 to 5 specimens, keeping in dense but not very high forest. Their flight is very soft and remembers much that of an Owl.

Iris, cere and feet yellow.

Haliaeetus angolensis.

Falco angolensis, Gmel. Syst. Nat. I. p. 252.

Haliaeetus angolensis, Schl. Mus. P.-B. Revue Accip. p. 119.

Gypohierax angolensis, Hartl. Orn. W. Afr. p. 1; — Sharpe, Cat. Birds Br. Mus. I. p. 312.

Hab. Tropical West and East Africa.

Adult and young specimens from Bavia (St. Pauls R.) and Grand Cape Mount.

Very common in the coast regions, as far as open country prevails. On the banks of the St. Pauls R. we have only met with it as far as Bavia, about 30 miles from the coast; at Soforé Place, 30 to 40 miles higher up, we have never seen it. In its habits this bird agrees more with the European *H. albicilla* than it does with the Vultures. Its airy is built, like that of *Milvus aegyptius*, on the highest cotton-trees in the vicinity of the water. This bird feeds generally upon fish, but seems to be very fond of palm-nuts (the fruits of *Elaeis guineensis*), as we have found those fruits more than once in the stomach of killed specimens. On account of this peculiarity its flesh is much desired by the natives, who tell it to be »very sweet”.

Iris orange yellow; bill in old specimens white, in younger ones bluish gray, naked parts of the face orange yellow, feet dirty yellow.

Milvus aegyptius.

Falco aegyptius, Gmel. Syst. Nat. I. p. 261.

Milvus parasitus, Hartl. Orn. W. Afr. p. 10.

Milvus aegyptius, Schl. Mus. P.-B. (Milvi) p. 3 (1862);
— Sharpe, Cat. Birds Br. Mus. I. p. 320.

Milvus migrans (part.), Schl. Mus. P.-B. Revue Accip.
p. 126.

Hab. The whole of Africa and Madagascar, South of Europe.

Five specimens (old and young from different places).

The Yellow-Billed Kite is the commonest bird of prey in Liberia. We found it breeding on high, inaccessible cotton-trees (*Eriodendron anfractuosum*), very often in open country near the coast, more seldom in the vicinity of large rivers in the Interior. It is seen perching on trees along rivers and creeks, and visits, like *Haliaeetus angolensis*, the sea-shore. Its principal food are small mammals, reptiles, molluscs and fish. Beside the five already mentioned we have shot more than twenty specimens, but not a single one had the bill quite black, showing all more or less a yellowish horn-color, becoming a bright orange-yellow in adult specimens. I have little doubt that even quite young specimens, when alive, can be distinguished from the closely allied *M. migrans* by the more or less yellowish color of the bill.

Iris umber-brown, cere and feet orange-yellow.

Baza cuculoides.

Avicida cuculoides, Swains. B. W. Afr. I. p. 104, pl. 1. — Hartl. Orn. W. Afr. p. 10.

Baza cuculoides (part.), Schl. Mus. P.-B. Rev. Accip. p. 133. — Sharpe, Cat. Birds Br. Mus. I. p. 354, pl. 11, fig. 2.

Hab. From Liberia to the Congo.

One specimen (adult male) from Buluma (Fisherman Lake).

I believe this species to be very rare, as I had only once the chance of killing one, i. e. the male of a pair, inhabiting a deserted old farm. All I tried to get the female bird also, which came up as soon as the male was shot, would not help, and the next day it had left the place for ever. The stomach of my specimen was empty, but as far as I could observe the mentioned pair, they must feed almost exclusively upon locusts, which are abundant in that place.

Iris red, cere and feet orange.

Total length 37, wing 28,6, tail 19, tarsus 2,6, middle toe 3 cm.

Caprimulgus cinnamomeus.

Caprimulgus cinnamomeus, Sharpe, Ibis, 1871, p. 414.
Hab. Liberia and Gold Coast.

Two specimens, one a female, the other of undetermined sexe, both quite similar in color and size, were collected at Buluma, near the Fisherman Lake.

Like its congeners, the Red Goatsucker hides itself, during the day, in brushwood and is met with in the evening, short after sunset, on barren ground, like farms and footpaths, where it can be approached very nigh, flying off, when disturbed, and coming down directly to the same spot again.

Iris black, bill flesh-color, with black tip, feet flesh-color.

Scotornis longicaudus.

Caprimulgus longicaudus, Drap. Dict. class. VI. p. 169.
Scotornis climacurus. (Vieill.), Hartl. Orn. W. Afr. p. 23.
Hab. Western and Eastern Africa.

Collected near Grand Cape Mount.

All my Liberian specimens are much darker than those

from the Senegal, the Gold Coast and Eastern Africa in our Museum, the principal color being a dark brown instead of clay or *pallide fulvo-flavescens*, as is said in Dr. Hartlaub's diagnosis (Orn. W. Afr. p. 23). The Liberian specimens suit pretty well the description of *Scotornis nigricans* Salvad., given in Finsch & Hartl. Vög. O. Afr. p. 857, but as to the color of the tail, I cannot find the differences upon which the mentioned authors, besides the dark color, chiefly found the dark looking species.

Like other goatsuckers they are found in brushwood along the Fisherman Lake and near the sea-shore. Their voice resembles much the quacking of the West African bullfrog (*Rana occipitalis*).

Iris brown, bill black, feet flesh-color.

Waldenia nigrita.

Hirundo nigrita, Gray, Gen. of Birds, pl. 20.

Atticora nigrita, Hartl. Orn. W. Afr. p. 25.

Waldenia nigrita, Sharpe, Ibis, 1869, p. 461.

Hab. From Liberia to the Congo.

Five specimens, amongst which two quite adult, two in the plumage of passage and one young, all from the St. Pauls River.

The white throat-patch seems to be peculiar not to adult specimens only, but even to the youngest ones, as it exists, however mixed with a few fulvous feathers, in young specimens, collected at Bavia. Besides the white patch, the mentioned specimen is entirely grayish brown underneath. In the two not fully adult specimens, both males, the chest, sides of body and under tail coverts are already steel-blue, the abdomen chocolate-brown.

These fine Swallows are found along all the larger rivers I visited in Liberia. They can regularly be seen seated upon twigs and trunks of trees, rising to some height above the water, from where they hunt after flies and other insects, returning after a short flight to the

same spot where, in small excavities, their nests can be found.

Iris dark brown, bill and feet black.

Hirundo rustica.

Hirundo rustica, Linn. Hartl. Orn. W. Afr. p. 26.

This bird arrives in Liberia in great swarms in the beginning of the dry season, i. e. about half of November, when the Termites (*Termes bellicosus*) are swarming in the air. Famished as they are by the long journey, they make the most vivacious evolutions across the dark clouds of Termites, and the flapping of their bills can be heard even at some distance.

As I suppose these Swallows will not breed in their tropical winter-quarters, a nest with 3 half-fledged young ones, which I got on the 2nd of April 1882, short before my departure from Liberia, certainly will belong to the closely allied *H. lucida* (Verr. J. f. O. 1858, p. 42; Sharpe, P. Z. S. 1870, p. 308). I found it on an old window-seat of the Dutch factory at Monrovia. It was built in the same way as the nests of our *H. rustica*.

Eurystomus afer.

Coracias afra, Lath. Ind. Orn. I. p. 172.

Eurystomus afer, Hartl. Orn. W. Afr. p. 28; — Schl. Mus. P.-B. Coraces, p. 142. — Sharpe, Ibis, 1871, p. 274.

Hab. West Africa, as far down as Angola; East Africa, as far as the Zambesi.

Three specimens from the St. Pauls River and the Fisherman Lake.

The adult male nearly entirely cinnamon, but shaded underneath and on the under wing-coverts with purple. Under tail-coverts, under surface of quills and tail-feathers, except the black tips, sea-green. Bill entirely orange-

yellow. The old female differs from the old male by its having more sea-green underneath, viz. this color extending over the whole abdomen and under wing-coverts, but sensibly shaded with purplish. Bill pale yellow, inclining to brown at the tip.

The young female is still more sea-green underneath, this color extending over the breast, where it becomes mixed with some brown feathers. Bill like in the old female.

This species is, like the following, met with in farms, sitting for hours quietly on an isolated twig in the hot sun, only now and then flying off after a wasp or bee and coming back to the same spot again.

Iris brown, in the younger specimen grayish brown, feet grayish brown.

Eurystomus gularis.

Eurystomus gularis, Vieill. N. Dict. Hist. Nat. XXIX. p. 246; — Hartl. Orn. W. Afr. p. 29; — Schl. Mus. P.-B. Coraces, p. 143; — Sharpe, Ibis, 1871, p. 278.

Hab. West Africa, from the Senegal to the Gaboon.

Three adult specimens from the St. Pauls River (Bavia and Soforé Place). All three similar in color, but the female specimen distinguished by a sea-green hue, covering the azure gular patch, which is peculiar to the adult male.

Iris brown, bill orange-yellow, feet grayish flesh-color.

Alcedo cyanostigma.

Alcedo cyanostigma, Rüpp. Neue Wirbelth., Vög. p. 70, pl. 24, fig. 2 (first plumage).

Alcedo cristata, Hartl. Orn. W. Afr. p. 36; — Schl. Mus. P.-B. Revue Alced. p. 6.

Corythornis cristata, Sharpe, Mon. Alced. p. 35, pl. 11.

Corythornis cyanostigma, Oustalet, Nouv. Arch. du Mus. 2^e série, II. p. 72; — Boc. Orn. d'Angola, p. 96.

Hab. The whole of Africa.

Collected along the Marfa River. — In its habits it resembles our *Alcedo ispida*.

Iris dark brown, bill and feet coral-red.

Alcedo picta.

Todus pictus, Bodd. Tabl. des Pl. Enl. p. 49.

Alcedo picta, Gray, Gen. of Birds, I. p. 81, pl. 28.

Alcedo cyanotis, (Sw.) Hartl. Orn. W. Afr. p. 35.

Alcedo picta, Schl. Mus. P.-B. Rev. Alced. p. 8.

Ispidina picta, Sharpe, Mon. Alced. pl. 51.

Hab. West Africa, from the Senegal to Angola; N. E. Africa.

Collected along the St. Paul and near the Fisherman Lake.

This fine species is not exclusively found along the water, as we got it also in farms, where it seems to feed upon insects.

Iris black, bill and feet coral-red.

Ceryle maxima.

Alcedo maxima, Pall. Spic. Zool. fasc. IV, p. 14.

Ceryle maxima, Hartl. Orn. W. Afr. p. 37.

Alcedo maxima, Schl. Mus. P.-B. Rev. Alced. p. 1.

Ceryle maxima, Sharpe, Mon. Alced. pl. 20.

Hab. Whole of Africa.

Not rare round the Fisherman Lake and along the Marfa River, especially in the estuary of the latter, where the Mangrove-vegetation prevails. There it can be seen seated on an overhanging branch about 10 to 20 feet above the water, from where it plunges with a tremendous power into the water after some fish. The nests of this species were found in the banks of the Marfa River. They contained, at the end of December, two pure white eggs of the well-known shape of Kingfishers eggs, which measured 4,4 cm. in length and 3,5 cm. in width.

Iris dark brown, bill and feet black.

Ceryle rudis.

Alcedo rudis, Linn. Syst. Nat. I. p. 181.

Ceryle rudis, Hartl. Orn. W. Afr. p. 37; — Sharpe, Mon. Alced. pl. 19; — Boc. Orn. d'Angola, p. 97.

Alcedo rudis, Schl. Mus. P.-B., Revue Alced. p. 1.

Hab. The whole of Africa, South of Europe and of Asia.

Plentiful in the Cape Mount Country, especially near the mouth of the Marfa River. A large series of adult and young specimens collected.

This bird is frequently seen hovering for a minute or two in a height of about 30 feet, and plunges, after having espied a little fish or the like, with great rapidity into the water.

The nest-holes of this species are found in great number in the clay banks of the Marfa River, not far from its mouth. The eggs, commonly three to six in number, are not different in form and color from those of *C. maxima*, but much smaller, the axis being 2,9 cm., the diameter 2,3 cm. All the nestlings I collected had but one black band across the chest.

Iris dark brown, bill and feet black.

Halcyon senegalensis.

Alcedo senegalensis, Linn. Syst. Nat. I. p. 180.

Halcyon senegalensis, Hartl. Orn. W. Afr. p. 31; Sharpe, Mon. Alced. pl. 70.

Dacelo senegalensis (part.), Schl. Mus. P.-B., Revue Alced. p. 21.

Hab. Tropical and Southern Africa.

Several specimens collected on the banks of the St. Paul and in the Country of Grand Cape Mount.

Iris black, upper mandible coral-red, lower mandible black, feet brown, soles red.

Halcyon cyanoleuca.

Alcedo cyanoleuca, Vieill. N. Dict. Hist. Nat. p. 401, pl. 19.

Halcyon cyanoleuca, Hartl. Orn. W. Afr. p. 31; — Sharpe, Mon. Alced. pl. 69.

Dacelo senegalensis (part.), Schl. Mus. P.-B., Revue Alced. p. 21.

Halcyon senegalensis (part.), Shelley, Ibis, 1883, p. 557. Hab. Senegambia, Liberia, Angola, Southern Africa.

One specimen (♀) collected at Bavia (St. Paul).

Notwithstanding Prof. Schlegel's and Capt. Shelley's uniting this species with *H. senegalensis*, I have the impression of its being a well-defined species. My Liberian specimen as well as two from the Senegal, being N^o. 3 and 4 of Prof. Schlegel's Catalogue, fully agree with description and plate, given by Mr. Sharpe in his excellent Monograph, while there is no intermediate form neither in the collection of the Museum nor amongst my Liberian birds. My specimen was shot in brushwood near the St. Pauls River.

Iris black, upper mandible of bill scarlet, lower mandible black, feet brown, soles red.

Halcyon malimbica.

Alcedo malimbica, Shaw, Gen. Zool. VIII. p. 66.

Halcyon cinereifrons and *H. dryas*, Hartl. Orn. W. Afr. p. 32.

Halcyon dryas and *H. malimbica*, Sharpe, Mon. Alced. p. 193, pl. 71 and p. 196, pl. 72.

Dacelo cinereifrons, *D. malimbica* and *D. dryas*, Schl. Mus. P.-B., Revue Alced. p. 20.

Hab. West Africa, from the Senegal to Angola; S. E. Africa.

A series of adult males and females, a semi-adult female

and a young male (nestling) collected at Bavia, St. Pauls River, and at Buluma, near the Fisherman Lake.

My field determinations of this series having been *Dacelo malimbica* for the specimens from the St. Paul, and *D. cinereifrons* for those from the Fisherman Lake, I was quite astonished, when coming home, to find not the least difference between them. So I was obliged to compare them more carefully with the collections of the two species in our Museum, united by Dr. Hartlaub under the epithet of *H. cinereifrons*, by Mr. Sharpe and others after him under that of *H. malimbica*, but by Prof. Schlegel, in his »Revue de la collection des Alcedines” considered to be two different species.

Prof. Schlegel based his *Dacelo cinereifrons* upon its larger size, its generally paler blue color, especially that of the chest, which he calls »un beau vert aigue-marine” in *D. malimbica*, and, last not least, upon the habitat, as he writes: »Notez que cet oiseau (*cinereifrons*) n’a pas été observé à la Côte d’or.” And the material, then at his disposition, entitled him to do so, as amongst his three specimens of *D. cinereifrons*, there is only that from Bissao, though quite similar in color, somewhat smaller than the two others from the Senegal.

My Liberian birds now seem to form a link between Prof. Schlegel’s *D. cinereifrons* and *D. malimbica*, as they are perfectly according with *D. cinereifrons* in color, but with *D. malimbica* and the already mentioned specimen from Bissao, in size. Being sure that Prof. Schlegel, could he compare the material now at hand, would be the first to unite *D. cinereifrons* with *malimbica*, I cannot hesitate to unite both species, like Mr. Sharpe did in his splendid Monograph, under the name of *Halcyon malimbica*.

As much as I am convinced of the identity of the two mentioned forms, I yield to the opinion that *Halcyon dryas* (Hartl.) is, like *H. senegalensis*, a mere local variety of *H. malimbica*, restricted, since the Gold Coast specimens (Rio Boutry, Pel) have turned out to be the true *H. malimbica*,

to St. Thomas and Prince's Island and to the opposite mainland ¹).

Halcyon dryas is according very well with the variety *cinereifrons*, both in size and color, having the same tinge of the blue parts as our specimens from the Senegal. If there is any difference between them, it must be sought for in the color of the crown, which is decidedly more olivaceous in *H. dryas* than in *H. cinereifrons*, but, as will be shown directly, this color depends too much on the age, as that it would draw a sufficient limit between them.

Concerning the color of the crown in *H. malimbica*, attention must be called to the fact that in quite young specimens the crown of the head, except the front, is of a somewhat dull sea-green, passing with growing age through olivaceous into dirty gray, but always inclining more or less to olivaceous towards the nape. The crown of our Bissao bird cannot be distinguished from that of *H. dryas*.

The color of the under surface may also be considered a positive character for the age of these birds. In quite young specimens, the colors underneath are principally the same as in the adult, but more or less covered with an ochraceous buff, occupying even the cheeks and sides of the neck, the sea-green on the breast being much less intense than it is in the adult bird. In more advanced specimens the ochraceous color successively gives way to the color of the adult, beginning in the centre of abdomen and throat, and ending on the sides of the body. The beautiful sea-green seems to proceed successively, and only occasionally by moulting as is the case with a semi-adult Liberian specimen which shows some splendid new feathers amongst the dull greenish ones.

The bill in young birds is of a deep orange-red, with but little dark (cherry-brown) marks on the lower mandible.

1) A specimen from the Senegal, mentioned by Mr. Bouvier (Cat. Geogr. des Ois. recueillis par Marche et Compiègne, Paris 1875) as *H. dryas*, will undoubtedly be the Senegal variety of *H. malimbica*.

More advanced birds change the red of the lower mandible into black, keeping the red point only till they have got the dress of the quite adult stage. This fact can easily be followed through all three groups in question, as I have before me the mentioned nestling from Liberia, with a nearly entirely red bill, a semi-adult bird from Liberia, another from the Gold Coast, four from Prince's Island and the nearly adult bird from Bissao. In all them the lower mandible is more or less red, and all of them have the red point. One of our 6 birds from Prince's Island 1) (*H. dryas*, Hartl.) has the lower mandible quite black, and so Capt. Shelley cannot be quite right when he says that *H. malimbica* may be most readily distinguished by the color of the bill (Ibis, 1883, p. 557).

The measures in the three conspecies are as follows (in cm.):

	wing	tail	tarsus	bill from front
Halcyon cinereifrons (Senegal, Bissao)	11,6—12,5	9—9,5	1,4—1,6	5,3—6,7
" dryas (Prince's Island)	11,8—12,6	7,8—8,4	1,6—1,8	5,2—5,9
" malimbica (Gold-Coast)	11,5—11,7	8—8,3	1,4—1,5	4,8—5,2
" " (Liberia) full grown	10,8—11,7	8—8,2	1,5—1,6	4,7—5

This species is found in brushwood especially along the water and, in the coast-region, on the Mangrove.

The stomach of my specimens collected in the forest, contained grasshoppers and Mantidae, those of the Mangrove birds small crabs.

Iris dark brown, feet coral-red.

Halcyon badia.

Halcyon badius, Verr. Rev. et Mag. de Zool. 1851. p. 264.

Halcyon badia, Hartl. Orn. W. Afr. p. 33; — Sharpe, Mon. Alced. pl. 58.

Dacelo badia, Schl. Mus. P.-B., Revue Alced. p. 19.

1) Collected by Dr. H. Dohrn.

Hab. Sierra Leone, Liberia, Gaboon, R. Ogobai.

Two male specimens from Soforé Place (St. Paul).

This very rare bird is but occasionally seen in brushwood, surrounded by high forest. There it sits for hours motionless on some twig not very high above the ground, pushing forth now and then a harsh cry. It is not shy at all and will hardly move even when within reach of gunshot. Never observed in the coast region. Food: beetles and other insects.

One of my specimens (fully adult) is entirely white underneath, while a younger male has the feathers on chest and flanks margined with a very narrow black line. Sides of body in both specimens black, under wing-coverts white, except those of the primaries, which form a black patch.

Iris dark brown, bill vermilion-red, feet brown.

Halcyon semicaerulea.

Alcedo semicaerulea, Forsk. Descr. Anim. p. 2.

Halcyon semicaerulea and *H. rufiventris*, Hartl. Orn. W. Afr. p. 33.

Halcyon semicaerulea and *H. erythrogastra*, Sharpe, Mon. Alced. pl. 64 and 63.

Dacelo semicaerulea, Schl. Mus. P.-B., Revue Alced. p. 19.

Hab. Canaries, St. Jago, West Coast of Africa from the Senegal to the Cuene River; Abyssinia.

Although far from being a vivaceous bird, the White-headed Kingfisher is not quite as sluggish as the foregoing species. It inhabits brushwood and adjacent farms.

Iris blackish brown, bill and feet coral-red.

Merops albicollis.

Merops albicollis, Vieill. N. Dict. H. N. XIV, p. 15; — Hartl. Orn. W. Afr. p. 39; — Schl. Mus. P.-B., Merops, p. 5; — Boc. Orn. d'Angola, p. 88.

Hab. Senegal to Gaboon.

Collected at Bavia (St. Paul) and Buluma (Fisherman Lake). — Very common wherever open country exists, in farms, grassy plains, when interrupted by groves, even near the villages of the natives. A very dull bird, when seated for hours lonely on an isolated shrub or small tree, from where it occasionally darts after an approaching insect, but very lively and noisy, especially short before sunset, when crowded together in large swarms and wheeling about in the air.

Iris red, bill black, feet greenish flesh-color.

Merops erythropterus.

Merops erythropterus, Gm. Syst. Nat. I, p. 464.

Merops erythropterus and *M. collaris*, Hartl. Orn. W. Afr. p. 40.

Merops erythropterus, Schl. Mus. P.-B., Merops, p. 10.

Hab. West Africa, from Senegambia to Damara Land; East Africa.

Collected near Buluma.

The Red-winged Bee-eater is by far not as common as the foregoing species, living rather in pairs or small couples of pairs than in large flocks together. It lives generally in farms, keeping tolerably close to the ground and picking up ants and other running (not flying) insects.

Iris red, bill black, feet dark brown.

Merops gularis.

Merops gularis, Shaw, Nat. Miscell. pl. 337; — Hartl. Orn. W. Afr. p. 42; — Schl. Mus. P.-B., Merops, p. 12.

Hab. W. Africa, from Sierra Leone to Angola.

A series collected at Monrovia, near the Fisherman Lake and along the Marfa River.

This beautiful Bee-eater is found in pairs or small flocks wherever open country exists, but was never met with in the Interior, that is about more than 10 to 15 miles from

the coast. It has a very nice quavering song but is much more quiet and makes not the evolutions of its congener *M. albicollis*. When singing, it sits tolerably erect on a dry isolated twig, about 20' above the ground, almost exposed to the hot sun, and let, while warbling, hang down its splendid red throat-feathers. Along the Marfa River I found them hunting in flocks of 6 to 10 specimens after flies and mosquitos, plunging now and then, in pursuit of their pray, into the water.

Iris red, bill black, feet dark brown.

Cinnyris verticalis.

Certhia verticalis, Lath. Ind. Orn. I. p. 198.

Nectarinea cyanocephala (♂) and *verticalis* (♀), Hartl. Orn. W. Afr. pp. 49 and 50.

Cinnyris verticalis, Shelley, Mon. Nect. p. 301, pl. 97; — Gadow, Cat. Birds Br. Mus. IX. p. 80.

Nectarinia cyanocephala, Boc. Orn. d'Ang. p. 171.

Hab. West Africa, from Senegambia to the Quanza.

Collected at Robertsport and Monrovia (Grave-yard).

This species is found in farms and brushwood.

Iris dark brown, bill and feet black.

Cinnyris fuliginosa.

Certhia fuliginosa, Shaw, Gen. Zool. VIII, p. 222.

Nectarinea fuliginosa, Hartl. Orn. W. Afr. p. 43; — Boc. Orn. d'Angola, p. 163.

Nectarinea aurea, Hartl. Orn. W. Afr. p. 44.

Cinnyris fuliginosus, Shelley, Mon. Nect. p. 275, pl. 86; — Gadow, Cat. Birds Br. Mus. IX. p. 95.

Hab. West Africa, from the Senegal to the Congo.

Two specimens (male and female) collected near Monrovia and Robertsport.

This species seems to be not common in Liberia, as I was not able to get a larger series of specimens. Like its

congeners it hovers about flowering shrubs in search for insects.

Iris brown, bill and feet black.

Cinnyris chloropygia.

Nectarinia chloropygia, Jard. Ann. and Mag. Nat. Hist. X. p. 188; — Hartl. Orn. W. Afr. p. 47; — Boc. Orn. d'Ang. p. 170.

Cinnyris chloropygius, Shelley, Mon. Nect. p. 257, pl. 79; — Gadow, Cat. Birds Br. Mus. IX. p. 34.

Hab. West Africa, from Senegambia to Angola.

A small series with nests and eggs, collected at Grand Cape Mount.

The commonest of all Sun-birds known to me from Liberia.

Iris dark brown, bill and feet black.

Its nest hangs at the end of a twig about 3' above the ground, generally in old farms, where grass and brush-wood are growing up again. It is of a pouch-like, somewhat oval shape, filted together with the soft fibres of plantain-leaves and cotton, with which latter material it is very thickly lined, and outside decorated with interwoven pieces of *Lichen*, which gives it a gray and white speckled appearance. The entrance, a round hole in the side near the top, is covered by a kind of jetty, built from the same material as the nest. Each nest contains commonly two, very seldom three eggs of an oval form. Axis 1,5, diameter 1,1 cm.; color grayish white with concentrated dirty streaks at the thicker pole. Collected the 14th November.

Cinnyris venusta.

Certhia venusta, Shaw, Nat. Misc. X, pl. 369.

Nectarinea venusta, Hartl. Orn. W. Afr. p. 48.

Cinnyris venustus and *C. affinis*, Shelley, Mon. Nect. p. 235, pl. 74, and p. 239.

Nectarinia venusta, Boc. Orn. d'Angola, p. 173.

Cinnyris venustus, Gadow, Cat. Birds Br. Mus, IX. p. 40.

Hab. West Africa, from Senegal to Congo; North East Africa.

Collected near Robertsport, along the Marfa River, and near Monrovia.

All our male specimens have the non-metallic parts of the under surface pale sulphureous, the pectoral tufts chrome-yellow.

The female birds are pale earthy brown above, and ashy white underneath; the centre of breast and abdomen with a tinge of yellow. Front, eyebrow, a streak below the eye, chin and throat, edge of wing, under wing-coverts and tips of tail-feathers white; quills, with the exception of the first and second, edged with olive. Bill shorter but less curved than in the males, and remembering much that of the genus *Anthreptes*, wing longer than in the male.

Iris of the male dark brown, of the female brownish red; bill black, feet sooty brown. Wing of the male 5,1 cm., of the female 5,5 cm.

The nests of this species are found along rivers, fixed to the end of overhanging boughs. They are not different in size and structure from those of *C. chloropygia*, but have a grayer appearance. The eggs, generally two in number, are ashy gray, slightly washed with violet, and irregularly varied with dark lines and spots. Axis 1,6 cm., diameter 1,2 cm. Collected the 20th of December.

Anthreptes hypodilus.

Nectarinia hypodilus, Jard. Contr. Orn. 1851, p. 153.

Nectarinea hypodelos and *N. subcollaris*, Hartl. Orn. W. Afr. p. 52.

Nectarinia hypodelos, Boc. Orn. d'Angola, p. 176.

Anthreptes hypodila, Shelley, Mon. Nect., p. 345, pl. 111.

Anthothreptes collaris (part.), Gadow, Cat. Birds Brit. Mus. IX, p. 116.

Hab. West Africa, from Senegambia to Angola.

Collected at Buluma, Fisherman Lake.

An adult female has the feathers of the throat edged with shining golden green.

Iris dark brown, bill and feet black.

Prinia mystacea.

Prinia mystacea, Rüpp. N. Wirbelth. Vög. 110; — Sharpe, Cat. Birds Br. Mus. VII. p. 191.

Drymoeca superciliosa, *melanorhyncha* and *mystacea*, Hartl. Orn. W. Afr. pp. 55, 56 and 57.

Hab. The whole of Africa, below the Sahara (Sharpe).

An adult female with nest and eggs, collected near Robertsport, Oct. 26th. This specimen is according very well with the description of Swainson, much better than with that of Rüppell (*Drymoeca mystacea*).

Iris reddish brown, bill black, feet pale flesh-color.

The globular nest, upon which I caught the bird, was built in the top of a low shrub, in a swamp, about 2' above the water. It was very neatly woven from narrow strips of grass leaves and sewed to some green leaves, the edges of which had been perforated for that purpose. A large leaf was sewed to the top of the nest and covered it like a roof, forming a kind of portico above the aperture, which is on the side of the nest, near the top. The nest had no lining at all. It contained four beautiful eggs of a pale green color and very irregularly spotted with brown, especially round the thicker pole. Axis 1,55 cm., width 1,05 cm. Another nest of the same species I found in a Coffee-tree at Robertsport, fastened on the same way between two large Coffee-leaves.

Cisticola lateralis.

Drymoeca lateralis, Fras. P. Z. S. 1843, p. 16; — Hartl. Orn. W. Afr. p. 55.

Cisticola lateralis, Sharpe, Cat. Birds Br. Mus. VII. p. 251.

Hab. West Africa, from Liberia to the Congo.

Three specimens from Soforé Place.

All three specimens were shot in high, isolated trees, standing in farms. They have a soft, melodious song.

Iris reddish yellow, bill black. feet flesh-color.

Cisticola rufa.

Drymoeca rufa, Fras. P. Z. S. 1843, p. 17; id. Zool. Typ. pl. 42; — Hartl. Orn. W. Afr. p. 58.

Cisticola rufa, Sharpe, Cat. Birds Br. Mus. VII. p. 252.

Hab. West Africa, from Liberia to the Congo.

Two specimens (male and female) from Grand Cape Mount.

The male, killed in October, has a very worn plumage, its color generally more inclining to gray than the female. This latter was shot in May, and its freshly moulted plumage is more fulvous. Darker shaft-stripes on the upper surface can be seen in both specimens, and also under a certain light narrow cross bars on the tail-feathers. Wing of the male 4,7 cm., of the female 4,2 cm.

Iris reddish brown, upper mandible horn-color, lower mandible and feet flesh-color.

Acrocephalus turdoides.

Calamoherpe turdoides (Meyer), Hartl. Orn. W. Afr. pag. 61.

Acrocephalus turdoides, Seebohm, Cat. Birds Br. Mus. V. p. 95.

Observed in Robertsport, Grand Cape Mount.

It was in the morning of the 26th of November, when I heard the first time the well-known song of this bird, and from that time I could hear and see it every morning and sometimes all day long in a kind of long reed that grows there on dry, stony ground. It was the only specimen I ever heard in Liberia, and I was so much amused

with its song and the attachment it proved to have to my station, that I was not able to kill it. A few days before new-year, just after I had decided to get hold on it, I found that it had left the place.

Camaroptera brevicaudata.

Sylvia brevicaudata, Cretzschm. in Rüpp. Atlas, Vög. p. 53, pl. 35.

Camaroptera brevicaudata (part.), Hartl. Orn. W. Afr. p. 62; — Boc. Orn. d'Ang. p. 280; — Sharpe, Cat. Birds Br. Mus. VII. p. 168.

Hab. The tropical part of Eastern and Western Africa. An adult male collected near Monrovia.

Iris pale brown, bill black, feet flesh-color.

Motacilla vidua.

Motacilla vidua, Sundev. Oefv. Vetensk. Akad. Förhandl. 1850, p. 128; — Finsch and Hartl., Vög. Ost-Afr. p. 263; — Boc. Orn. d'Angola, p. 291.

Hab. Africa below the Sahara, Egypt; Palestine (Tristram).

Collected at Bavia, on rocky Islands in the St. Pauls River.

Plentiful on the sand-banks and bare rocks which, on account of the dry season, grow larger every day, till they become covered again by the rising water in the rainy season.

Two young specimens in my possession show the same coloration as the adult ones, only is the dark color, the collar round the fore-neck included, grayish brown instead of black. Not the least difference can be found between my Liberian specimens and five other ones of the same species from the Cape, contained in the Leyden Museum.

Iris, bill and feet black.

Motacilla flava.

Motacilla flava, Linn. S. N. p. 331.

Budytes Rayi (Bonap.), Hartl. Orn. W. Afr. p. 72.

Motacilla flava, Finsch und Hartl. Vög. Ost-Afr. p. 268.
Collected at Grand Cape Mount.

Not rare in farms, even close to the villages of the Negroes.

Iris brown, bill and feet black.

Anthus pyrrhonotus.

Anthus pyrrhonotus, Vieill. N. Dict. d'Hist. Nat. I. p. 361; — Sharpe et Bouvier, Bull. S. Z. France. II. p. 477.

Anthus Gouldii, Fras. P. Z. S. 1843, p. 27; — Hartl. Orn. W. Afr. p. 73.

Hab. Africa, South of the Sahara.

Collected at Buluma, near the Fisherman Lake.

A male bird, contained in my collection is according very well with the description in Hartlaub. A female, shot on the same spot a few days later, is darker brown underneath and has very strongly pronounced dark moustachial stripes. Exactly similar in size and color is a male specimen in the Leyden Museum, collected by v. Heuglin at Bongo and sent in under the name of *Anthus mystacalis*.

These birds are generally found in pairs together, in farms and grassy plains short after the grass is burnt off. Wing in male 9,5, in female 9 cm.

Iris dark brown, upper mandible blackish horn-color, lower one yellowish flesh-color, feet flesh-color.

Macronyx croceus.

Alauda crocea, Vieill. N. Dict. d'Hist. Nat. I. p. 365.

Macronyx croceus, Hartl. Orn. W. Afr. p. 73; — Boc. Orn. d'Angola, p. 297.

Notes from the Leyden Museum, Vol. VII.

Hab. The whole of tropical Africa.

Collected in the grassy plains along the Grand Cape Mount- and Marfa River.

This bird is very common in the plains along the Grand Cape Mount River after this latter has left the Fisherman Lake. These plains seem to be one of those limited places where the bird is living in great number. Another such place is the plain on the right bank of the Marfa River near its mouth. On other plains, farther in the Interior, and on those between the Fisherman Lake and the Little Cape Mount River, offering quite the same conditions, I never saw it. This peculiar bird calls the attention by sitting on the top of *Anona senegalensis*, a small tree which is very characteristic for the plains, and singing its short and not unmelodious notes. Now and then it flies off and hovers for a moment at some height above the ground, before it comes down and hides itself, like our sky-lark, in the grass.

Iris brown, bill bluish gray, feet flesh-color.

Pitta angolensis.

Pitta angolensis, Vieill. N. Diet. d'Hist. Nat. IV. p. 356; — Hartl. Orn. W. Afr. p. 74; — Boc. Orn. d'Ang. p. 240; — Elliot, Monogr. Pittidae, pl. 4.

Hab. West Africa, from Sierra Leone to Angola.

Four specimens, collected at Bavia (St. Paul) and Grand Cape Mount.

This beautiful bird is but occasionally met with and seems to be very rare although it is spread over the whole country and can be found close to the coast as well as in the hilly region of the Interior. It inhabits brush-wood, where it keeps to the ground, only now and then jumping upon a twig, which occasionally stops its way. I had but once the chance to observe it for a while when laying in a thicket to wait for wild hogs, but heard no sound of it. The other three specimens were caught in snares.

Notes from the Leyden Museum, Vol. VII.

Iris dark brown, bill horn-brown, base, nostrils and ridge orange, feet flesh-color.

Turdus pelios.

Turdus pelios, Bonap. Consp. I. p. 273; — Hartl. Orn. W. Afr. p. 75.

Turdus pelios and *T. chiguancoides*, Seebohm, Cat. Birds Br. Mus. V. p. 230 and 231.

Turdus icterorhynchus (Pr. Würt.), Boc. Orn. d'Ang. p. 265.

Hab. West Africa, from Senegal to Congo; East Africa, Niam-Niam Country (Bohndorff).

An adult female collected at Grand Cape Mount.

Perfectly similar in color with our type of *T. pelios*, except the flanks, which are »pale grayish brown» (*T. chiguancoides*), showing but a slight shade of »pale buffish chestnut», which latter color characterizes *T. pelios*. Wing 11,2 cm., tail 8,6 cm.

Iris brown, bill yellow, feet grayish flesh-color.

As my Liberian specimen would belong, after Mr. Seebohm, to *T. pelios* on account of its smaller size, but come very near to *T. chiguancoides* on account of its grayish brown flanks, it might be better to reunite *T. chiguancoides* with *T. pelios*, the more as our type of the latter is fully as large as Mr. Seebohm's *T. chiguancoides*, the length of the wing being 12 cm.

Cossypha poensis.

Cossypha poensis, Strikl. P. Z. S. 1844, p. 100; — Hartl. Orn. W. Afr. p. 77; — Sharpe, Cat. Birds Br. Mus. VII. p. 35.

Hab. West Africa, from Liberia to Gaboon.

Collected near Soforé Place, St. Paul's River.

Met with now and then in narrow bush-paths and thickets.

Iris dark brown, bill black, feet pale yellow.

Cossypha verticalis.

Cossypha verticalis. Hartl. Beitr. Orn. W. Afr. (1848) p. 23; id. Orn. W. Afr. p. 77; — Sharpe, Cat. Birds Br. Mus. VII. p. 45.

Hab. West Africa, from Senegambia to the river Niger; East Africa.

A male specimen, caught in a snare, in brushwood along a swamp.

Iris brown, bill black, feet grayish brown.

Alethe poliocephala.

Trichophorus poliocephalus (Temm.), Hartl. Orn. W. Afr. p. 85.

Alethe castanonota, Sharpe, Cat. Afr. Birds, p. 20; id. Cat. Birds Br. Mus. VII. p. 59, pl. 2.

Hab. West Africa, from Sierra Leone to the Gold Coast.

One specimen (adult male) from Soforé Place, St. Paul's River.

Met with in thickets and surrounding open places, keeping always close to the ground.

Iris brown, bill black, feet pale flesh-color.

There can be no doubt that Mr. Sharpe's *Alethe castanonota* is identical with Temminck's *Criniger poliocephalus* in the Leyden Museum, first mentioned by Bonaparte (Consp. I. p. 262) and more amply described, as an aberrant form of *Trichophorus*, by Dr. Hartlaub (Orn. W. Afr. p. 85). A thorough comparison with Mr. Sharpe's description and plate shows not the least difference with our four types from the Gold Coast and Fernando Po, the black chin, mentioned by Mr. Sharpe in his original diagnosis, being only overlooked in the short descriptions of Bonaparte and Dr. Hartlaub.

Crateropus atripennis.

Crateropus atripennis, Swains. Birds W. Afr. I. p. 278; — Sharpe, Cat. Birds Br. Mus. VII. p. 483.

Crateropus atripennis (part.) Hartl. Orn. W. Afr. p. 79.

Hab. West Africa, from Senegambia to Cape Palmas.

Collected in brushwood on the Cape Messurado.

Iris dark brown, bill horn-yellow, feet lead-color.

Turdinus gularis.

Turdinus gularis, Sharpe, Ibis 1870, p. 474; id. Cat. Birds Br. Mus. VII. p. 543, pl. 14.

Hab. West Africa, from Liberia to the Congo.

Collected on the Grave-yard at Monrovia.

Iris brown, bill and feet gray.

Criniger barbatus.

Trichophorus barbatus, Temm. Pl. Col. III. pl. 82; — Hartl. Orn. W. Afr. p. 82.

Criniger barbatus, Sharpe, Cat. Birds Br. Mus. VI. p. 82.

Hab. Liberia and Gold Coast.

Collected at Soforé Place (St. Paul's River).

Met with in high forest and brushwood along the St. Paul's.

Iris vermilion, bill and feet lead-color.

Criniger canicapillus.

Trichophorus canicapillus, Hartl. Beitr. Orn. W. Afr. p. 24; id. Orn. W. Afr. p. 84.

Xenocichla canicapilla, Sharpe, Cat. Birds Br. Mus. VI. p. 105.

Hab. West Africa, from Senegambia to the Gold Coast.

Collected at Soforé Place (St. Paul's) and Buluma (Fisherman Lake).

This bird is a very good singer and lives preferably in the underwood of the high forest along the water.

Iris brown, bill and feet lead-color.

Criniger leucopleurus.

Phyllastrephus leucopleurus, Cass. Pr. Philad. Acad. 1855, p. 328; — Hartl. Orn. W. Afr. p. 89.

Trichophorus nivosus, Hartl. J. f. O. 1855, p. 356; id. Orn. W. Afr. p. 84.

Xenocichla leucopleura, Sharpe, Cat. Birds Br. Mus. VI. p. 104.

Hab. West Africa, from Senegambia to the Congo.

Collected near Soforé Place (St. Paul's) and at Buluma (Fisherman Lake).

Found, like the former, in thickets and the undergrowth of high forest. It has a rich melodious song and contributes much to the interruption of the silence in the forest region.

Iris dark brown, bill brown, feet lead-color.

Criniger eximius.

Trichophorus eximius, Hartl. J. f. O. 1856, p. 356; id. Orn. W. Afr. p. 85.

Criniger eximius, Sharpe, Cat. Birds Br. Mus. VI. p. 88.

Hab. Liberia and the Gold Coast.

Collected near Soforé Place (St. Paul's).

This species inhabits, like its congeners, the high forest and occasionally visits the thickets of abandoned plantations.

Iris red, bill grayish horn-color, feet reddish brown.

Xenocichla syndactyla.

Dasycephala syndactyla, Swains. Birds W. Afr. I. p. 261.

Xenocichla syndactyla, Hartl. Orn. W. Afr. p. 86; — Sharpe, Cat. Birds Br. Mus. VI. p. 101.

Hab. West Africa, from Senegambia to Gaboon.

Collected near Soforé Place (St. Paul's).

Like the representants of the genus *Criniger*, this bird is a very good singer and lives preferably in the under-wood of the virgin forest.

Iris red, bill bluish horn-color, feet lead-color.

Andropadus latirostris.

Andropadus latirostris, Strickl. P. Z. S. 1844, p. 100; — Hartl. Orn. W. Afr. p. 87; — Sharpe, Cat. Birds Br. Mus. VI. p. 107.

Hab. Forest region of West Africa, from Senegambia to Gaboon.

Collected near Soforé Place (St. Paul's).

The only specimen we collected is a full-grown (young?) male with yellow moustachial streaks and the inside of the bill, the gape, the edges of the bill and the nostrils yellow.

Iris brown, feet ochraceous flesh-color.

Andropadus gracilirostris.

Andropadus gracilirostris, Strickl. P. Z. S. 1844, p. 101; — Hartl. Orn. W. Afr. p. 87.

Chlorocichla gracilirostris, Sharpe, Cat. Birds Br. Mus. VI. p. 114.

Hab. West Africa, from Gambia to Loango.

Male and female from Buluma, near the Fisherman Lake. Generally found, like its congener *A. latirostris*, in thickets, which it seems to prefer above the high forest. It has a nice soft song.

Iris red, bill black, feet lead-color, with somewhat darker toes.

Pycnonotus barbatus.

Turdus barbatus, Desf. Mém. Acad. Roy. de Sciences p. 500, pl. 13.

Iros ashanteus et *I. inornatus*, Hartl. Orn. W. Afr. p. 88.

Pycnonotus barbatus, Sharpe, Cat. Birds Br. Mus. VI. p. 146.

Hab. West Africa, from the Gambia to the Congo.

Collected, with nests and eggs, at Buluma and Robertsport.

The commonest bird in whole Liberia, especially in the Coast region, where it lives in open country, in the gardens of towns and villages and in coffee-plantations. Although it is not at all sparing its voice, I cannot agree with some authors who class it amongst the best vocalists of Western Africa. Its song is a loud, not unmelodious »chee, chee'-cheeguah and is generally the first sound which calls the attention of the naturalist after he has set foot on shore.

Iris reddish brown, bill and feet black.

The nest is a nice cup of about three inches wide, very neatly and thoroughly built from small roots and interwoven leaves, but without any lining, and is fixed in the fork of a branch, preferably of plum-trees (*Mangifera indica*). The eggs, generally two in number, are pale rose-color, densely stippled with brown and violet spots. Axis 2,2 cm., diameter 1,6 cm.

Terpsiphone nigriceps.

Tschitrea nigriceps, Hartl. J. f. O. 1855, pp. 355, 361; id. Orn. W. Afr. p. 91.

Terpsiphone nigriceps, Sharpe, P. Z. S. 1874, p. 306; id. Cat. Birds Br. Mus. IV. p. 359.

Hab. West Africa, from Senegambia to the Gold Coast.

Collected at Buluma (Fisherman Lake).

This bird is found in company with different other species which sometimes swerve in whole flocks through the high forest in search of insects.

Iris black, wattles round the eye, bill and feet cobalt-blue.

Bias musicus.

Platyrhynchus musicus, Vieill. N. Dict. d'Hist. Nat. XXVII. p. 15.

Bias musicus, Hartl. Orn. W. Afr. p. 92; — F. & Hartl. Vög. O. Afr. p. 313, pl. 3, fig. 2 & 3; — Sharpe, Cat. Birds Br. Mus. IV. p. 142.

Hab. West Africa, from Liberia to Angola; Zambesi.
Collected near Robertsport (Grand Cape Mount).

Tolerably common in brushwood along and on the grassy plains, in plantations and gardens, even in the Negro habitations. It feeds upon caterpillars and flying insects.

Iris golden yellow, bill black, feet pale yellow.

Artomyias ussheri.

Artomyias ussheri, Sharpe, Ibis 1871, p. 416; id. Cat. Birds Br. Mus. IV. p. 144, Pl. 3, fig. 2.

Hab. Liberia and Gold Coast.

An adult male, collected at Soforé Place.

I shot this rare bird in brushwood along the banks of the St. Paul's, where it seemed to live on insects.

Iris dark brown, bill black, feet sooty brown.

Platystira cyanea.

Muscicapa cyanea, S. Müller, Syst. Nat. Suppl. p. 170.

Platystira melanoptera, Hartl. Orn. W. Afr. p. 93; — Boc. Orn. d'Ang. p. 195.

Platystira cyanea, Sharpe, Cat. Birds Br. Mus. IV. p. 145.

Hab. West Africa, from Senegambia to the Congo.

Collected near Robertsport.

This species is not rare in brushwood along swamps and rivers. It feeds upon caterpillars which it picks off from twigs.

Iris brown, wattle above the eye scarlet, bill and feet black.

Muscicapa grisola.

Muscicapa grisola, Linn. Syst. Nat. I. p. 328; — Hartl. Orn. W. Afr. p. 97.

Hab. It is a winter visitant in whole Africa.

One specimen, collected at Buluma (Fisherman Lake).

This specimen, with a very worn, pale plumage, was shot in a glade near the Fisherman Lake, the 3rd of January.

Dicrurus atripennis.

Dicrurus atripennis, Swains. Birds W. Afr. I. p. 256; — Hartl. Orn. W. Afr. p. 101; — Sharpe, Cat. Birds Br. Mus. III. p. 232.

Hab. West Africa, from Sierra Leone to the Gold Coast. Collected near Monrovia.

This species seems to be rarer than its congener *D. modestus*, as we had only once the chance to obtain it. It was shot in young forest behind Monrovia.

Iris reddish brown, bill and feet black.

Dicrurus modestus.

Dicrurus modestus, Hartl. Rev. et Mag. de Zool. 1849, p. 495; id. Orn. W. Afr. p. 101; — Sharpe, Cat. Birds Br. Mus. III. p. 232.

Dicrurus coracinus, Verr. Rev. et Mag. de Zool. 1851, p. 311; — Boc. Orn. d'Ang. p. 548.

Dicrurus atripennis, Rehw. (nec Swains.), J. f. O. 1875, p. 26.

Hab. West Africa, from Liberia to Angola.

Collected at Buluma and near Caba on the banks of the Marfa River. Agreeing perfectly well with the large series of *D. modestus* resp. *coracinus* in the Leyden Museum, which Mr. Sharpe is very right in uniting under the name of *D. modestus*.

This species is found in clearings and plains, interrupted by boscage.

Iris red, bill and feet black.

Melaenornis edolioides.

Melasoma edolioides, Swains. Birds W. Afr. I. p. 257, pl. 29.

Melaenornis edolioides, Hartl. Orn. W. Afr. p. 102; — Sharpe, Cat. Birds Br. Mus. III. p. 315.

Hab. Western and North-eastern Africa.

A male and nest with eggs collected near Robertsport, Grand Cape Mount.

This bird must be rare in the districts visited by us, as I had only once the chance of observing it, when I found its nest in a swamp, directly behind the beach, near Robertsport. This nest, very much like a dove's nest in size and shape, is built from thorns and twigs, and lined very sparingly with little roots, just sufficient to prevent the eggs from dropping through it. It was built in the fork of a shrub tolerably far off from the centre, and about three feet above an almost inaccessible swamp. The eggs, two in number, are greenish gray, very closely covered with irregular, softened spots of ochraceous brown and tolerably obtuse at the narrower pole. Length of them 2,5, width 1,8 cm. I have shot male and female near the nest, on the 29th of October, but the mud not permitting my boy to reach the spot in time, the female escaped and only the male, a very fine specimen, was secured.

Iris dark brown, bill bluish black, feet very deep blue.

Fraseria cinerascens.

Fraseria cinerascens (Temm.), Hartl. Orn. W. Afr. p. 102; — Sharpe, Cat. Birds Br. Mus. III. p. 304; — Boc. Orn. d'Ang. p. 213.

Hab. West Africa, from Liberia to the Congo.

One specimen from Soforé Place, St. Pauls River.

In its habits and voice this bird is very much like *Platystira cyanea*. Like this latter species it climbs from twig to twig, hunting after insects and caterpillars. We have only found it along the banks of rivers in overhanging brushwood.

Iris brown, bill black, feet lead-color.

Telophonus senegalus.

Lanius senegalus, Linn. S. N. I. p. 137 (1766).

Lanius erythropterus, Shaw, Gen. Zool. VII. p. 301.

Telephonus senegalus & *erythropterus*, Hartl. Orn. W. Afr. p. 105 & 106.

Telephonus erythropterus, F. & Hartl. Vög. Ost Afr. p. 336; — Boc. Orn. d'Angola, p. 223.

Telephonus senegalus, Gadow, Cat. Birds Br. Mus. VIII. p. 124.

Hab. West and East of tropical Africa.

Collected on the Island of Gambia, in the estuary of the Grand Cape Mount River.

This bird is a regular inhabitant of the small bosquets and the so-called wild peach-trees (*Anona senegalensis*) with which the grassy plains are interspersed. In its habits it resembles much our Red-backed Shrike.

Iris and bill black, feet lead-color.

Nicator chloris.

Tchagra chloris, Less. Traité d'Orn. p. 373.

Laniarius peli (Bonap.), Hartl. Orn. W. Afr. p. 109.

Nicator chloris, F. & Hartl. Vög. O. Afr. p. 360; — Gadow, Cat. Birds Br. Mus. VIII. p. 166.

Hab. West Africa, from Senegambia to the Congo.

Collected at Bavia and in the Mountain of Grand Cape Mount.

This species is an inhabitant of high forest. We found it tolerably common along the St. Paul's, but rarer in the district of Grand Cape Mount.

Iris brown, bill black, feet and claws lead-color.

Dryoscopus gambensis.

Lanius gambensis, Licht. Verz. Doubl. p. 48.

Notes from the Leyden Museum, Vol. VII.

Dryoscopus gambensis (Bp.), Hartl. Orn. W. Afr. p. 110; —
Gadow. Cat. Birds Br. Mus. VIII. p. 146.

Hab. Tropical West- and East Africa.

Collected in brushwood near Monrovia.

Iris brick-red, bill black, feet dark lead-color.

Corvus scapulatus.

Corvus scapulatus, Daud. Traité d'Orn. p. 233; — Schl.
Mus. P.-B. Coraces; p. 3; — F. & Hartl. Vög. O. Afr.
p. 374: — Sharpe, Cat. Birds Br. Mus. III. p. 22; —
Boc. Orn. d'Ang. p. 300.

Corvus curvirostris (Gould), Hartl. Orn. W. Afr. p. 114.

Hab. The whole of Africa below the Sahara; Madagascar.

Collected at Buluma, near the Fisherman Lake.

Very common in the estuaries of the rivers, along the sea-shore, in short wherever animal food is to be found in considerable quantities. This species lives, more exclusively than any other of its congeners, upon fish, crawfish and molluses, which are sometimes left behind in great quantities by the retiring tide, and is, moreover, very fond of palm-nuts. During the palm-oil-season, from February to May, as the country-people say, its meat must be »much sweet'', and I was obliged to shoot lots of them for our boy's dinners. Now and then I tasted this »meat'' myself, and although I did not find it exceedingly palatable — especially that of adult birds — I much preferred it to that of Hornbills, Plantain-eaters, Parrots and the like, which is very tough and dry indeed. The nest of the African Rook is built in the crowns of high, inaccessible cotton-trees.

Iris chocolate-brown, bill and feet black.

Oriolus brachyrhynchus.

Oriolus brachyrhynchus, Swains. Birds W. Afr. II. p. 35; —
Hartl. Orn. W. Afr. p. 81; — Sharpe, Cat. Birds Br. Mus.
III. p. 218.

Oriolus baruffii, Bonap. Consp. I p. 347; — Schl. Mus. P.-B. Coraces, p. 109.

Hab. West Africa, from Sierra Leone to Gaboon.

Three specimens (males) collected near Soforé Place, St. Paul's River. Also observed in the district of Grand Cape Mount.

All these specimens being different from each other in size and in the color of the four middle tail-feathers, I cannot but agree with Mr. Sharpe, who considers *O. baruffii* Bonap. (Schl. Cat. Coraces) to be identical with *O. brachyrhynchus*. The principal reason of Prof. Schlegel for the separation of *O. baruffii* was its smaller size. The measurements of the wing in my three birds now show that one of them is larger, the other as large and the third smaller than our largest *O. baruffii*. One of them has the outer pair of the four olive-green median tail-feathers very largely, the other only a little and the last not at all marked with black, notwithstanding they are killed at about the same time, the first being shot in August, the second in September, and the third in October. Their song is very much like that of *O. galbula*, interrupted now and then by a kind of mewling, like that of a cat.

Iris red, bill cherry-brown, feet lead-color.

Pholidauges leucogaster.

Turdus leucogaster, Gm. Syst. Nat. p. 819.

Pholidauges leucogaster, Cab. Mus. Hein. I. p. 198; — Hartl. Orn. W. Afr. p. 120; — F. & Hartl. Vög. O. Afr. p. 376.

Hab. West Africa, from the Senegal to the Gaboon; North Eastern Africa.

A large series collected along the Fisherman Lake.

This species exclusively inhabits the open country, especially grassy plains, interrupted with small trees and thickets. There it is found sitting in small families together, exposed to the hot sun which seems not to cause it any annoyance.

The adult males sit solitary at some distance from the group. Adult females are not different from the young specimens of the year.

Iris sulphur-yellow, bill black, feet dark gray.

Hyphantornis aurantia.

Malimbus aurantius, Vieill. Ois. chant. pl. 44 (1805).

Hyphantornis aurantius, Hartl. Orn. W. Afr. p. 121. —
F. & Hartl. Vög. O. Afr. p. 868.

A series of specimens collected near Robertsport, Grand Cape Mount.

My adult specimens agree very well with the descriptions given by Finsch and Hartlaub. One of them labeled as a female, does not differ at all from the adult males. As the young stage of plumage of this bird is not yet described, it may be of some use to give a description of two young males, shot out of the same colony as the adult ones. One of them, probably the younger, shot the 25th of October, is uniform olive-green above, with darker centres to the feathers; edges of the secondaries and wing-coverts olive-yellow, but not as bright and broad as in adult specimens. Chin, throat, a superciliar stripe, edge of wing and under wing-coverts yellow, chest, abdomen, vent, sides of body and under tail-coverts pale gray, whitish on the centre of breast and abdomen and on the under tail-coverts. The young male, shot the 7th of November, is just changing into the plumage of the adult stage. The gray parts underneath are changing into yellow, forehead, chin and throat have strong marks of rich orange-color, the whole crown, and also the rump, changing from olive-green into yellow. Hind neck, back and wings not different from the younger specimen.

The iris of the adult male is yellowish brown, of the female and young birds red. Bill in adult specimens and in the more advanced of the described young birds black, in the other young bird flesh-color, feet of all specimens flesh-color. Food: grass seeds.

This bird is found in colonies of from 12 to 30 nests in thickets along the sea-shore, on the small islands lying before the mouth of rivers, and on the river-banks. The nests are not, like those of other weavers, built close together, but rather spread over a tolerably large territory, hanging from boughs of shrubs between 4 to 8 feet above the ground or, on the river-side, above the water. The nest has some resemblance in form to a kidney and is about 13 cm. long and 9 cm. high, with aperture and cup underneath. It is very strongly woven and firmly fastened to the bough. The eggs, generally three in number, are 2 cm. long and from 1,4 to 1,5 cm. wide; ground-color pale green, covered with irregular violet and brown spots, which are much concentrated on the larger pole.

A large series of nests and eggs collected in November.

Hyphantornis brachyptera.

Ploceus brachypterus, Swains. Birds W. Afr. I. p. 168, pl. 10.

Hyphantornis brachypterus, Hartl. Orn. W. Afr. p. 121.

Hyphantornis ocularius (part.), F. & Hartl. Vög. O. Afr. p. 397.

Hab. West Africa, from Senegambia to the Congo.

Collected near Robertsport.

As far as the material in the Leyden Museum allows a conclusion, *H. brachyptera* may always easily be distinguished from the closely allied *H. ocularia* (Smith) by its somewhat smaller size and more especially by its shorter and somewhat stouter bill. In the Leyden Museum are 3 specimens of *H. ocularia* from the Senegal and two others from Natal perfectly similar in every respect, while *H. brachyptera* is represented by a series of 11 specimens from Senegambia, the Casamanze, Liberia and from the Gold Coast. As the usual measurement of the culmen of the bill is rather uncertain, I have it, in this special case, replaced by that of the distance between the nostril and the point

of the bill, which distance is 1,2 cm. in *H. brachyptera* and 1,5 cm. in *H. ocularia*.

This species lives not gregarious like most of the weavers do, and is but sparingly found in brushwood and neighbouring rice-farms.

Iris yellowish white, bill black, feet flesh-color.

The nests of this species have, like those of *H. ocularia*, the shape of a large retort, hanging, with the open end downward, from boughs in thickets about 8' above the ground. They are very skilfully woven from long, elastic fibres and certainly the texture is one of the most solid and the most artificial of all weavers nests I ever examined. One of three collected nests contained 2 eggs. They are dirty white and all over, especially on their thicker pole, sprinkled with reddish brown. Length 2,1 cm., width 1,4 cm.; found 14th of November.

Hyphantornis textor.

Oriolus textor et *Loxia melanocephala*, Gm. Syst. Nat. pp. 390 & 859.

Hyphantornis textor, Hartl. Orn. W. Afr. p. 124.

Hab. West Africa, from Senegambia to the Gaboon.

Collected with nests and eggs at Robertsport.

Iris orange, bill of adult blackish horn-color, of young pale horn-color; feet flesh-color.

This species is, with *H. castaneofusca*, the commonest weaver in Liberia, and like the latter lives in large colonies together, in the crowns of huge Cotton-trees and isolated Oil- and Cocoa-palms, even among the Negro habitations. There can be seen sometimes more than a hundred nests in the same tree, all belonging to one colony. In the village of Robertsport I saw this species, together with *H. castaneofusca*, united in one colony, not only breeding in the same tree, but their nests mixed with each other. As they had taken possession of a tolerably low tree, I could easily observe them with the aid of my spyglass. They

kept up a continual and deafening chatter the whole day long when building their nests, which was fully one day's work. As soon as one had brought along some suitable material and disappeared to get some more, another, apparently more lazy, came on to tear away what the first had built, and use it for his own purpose. A tremendous alarm and furious fight was always the result of such burglary, and palaver was not settled before some feathers were lost and some blood was shed. Not seldom we found colonies of *H. textor* far from human habitations, even in forests. It is very peculiar that these birds like to settle in trees, where *Haliaetus angolensis* has built its airy, so that, in the Cape Mount Country, really hardly such an airy is found without being surrounded by a colony of those noisy weavers. Whether the first likes to have such an animated society and builds its airy amongst the colony, or the weavers do the same for security, I do not know, but as the huge airy lasts much longer than the pouches of the weavers, I think the latter reason more probable. At the harvest-time these birds, like most of their congeners are a plague to the rice-fields which they visit in enormous clouds. On account of that, all the weavers together are called »rice-birds'' by the Liberian settlers, and the latter as well as the native rice-farmers are compelled to keep watch and drive the birds away.

Nest and eggs of this species can hardly be distinguished from those of *H. castaneofusca*. The former is of a globular form, almost like a snail-shell, with the hole underneath, and fastened to the end of a twig so that a tree with such a colony of weavers looks as if it was overloaded with large fruits. The materials, used for that purpose, are generally the leaves of a very strong kind of reed or, in its absence, the leaves of palmtrees. A small bite is first made in the lower part of the leaf and the bird then seizing in its bill the fiber next the bitten place flies off holding it firmly in its beak and thus tearing off a long strip of the leaf which it takes to its

nest. They begin always by tying together the forks of a twig as to make the aperture, after which they build on just in the same way as a stocking is knitted. The nest is very neatly lined with leaves and the cup with some soft, dry grass. Each nest contains two, more seldom three pale green eggs, sparingly stippled with brown. Length of the eggs 2,3 cm., width 1,6 cm. Collected in October.

Hyphantornis castaneofusca.

Ploceus castaneofuscus, Less. Rev. Zool. 1840, p. 99.

Hyphantornis castaneofuscus, Hartl. Orn. W. Afr. p. 126.

Hab. West Africa, from the Casamanze to the Gaboon. Collected at Bavia (St. Paul's) and at Robertsport.

Iris yellow, bill black, feet flesh-color.

As this species is identical with the foregoing in its habits, much more cannot be said about that matter. It is just as common as *H. textor*, keeps close to human habitations and was never found in the forest. Colonies of this bird apparently prefer lower positions for breeding and are not seldom met in the vast reed-jungles where the nests are very strongly tied to the tops of one or two canes. They seem to be very particular in the selection of a new breeding-place, as the following observation will show.

In December 1881 my attention was called one evening to an unusual noise in a not very high tree close to my hunting station at Robertsport. There was a great number of *H. castaneofusca*, flying off and coming back again and examining very minutely the whole tree, and all that with a tremendous noise. They were »talking palaver”, as my boys told me on asking for the reason. Early in the morning of the next day, a whole cloud of the same birds came on and took, with a deafening noise, possession of the tree, where they immediately began building their hanging nests. As one of those reed-fields was close

by, they proceeded very fast in their work which kept them in a state of astonishing activity the whole day long. I spent much time that day in observing their proceedings, which I could do very easy, my spyglass in hand, from my window. At sunset the nests, 54 in number, were finished, as far as I could observe from my position, and the birds flew off altogether for their night-lodging. The next morning soon after they had come back, I heard a terrible noise again. The birds examined tree and nests from all sides — something must apparently have happened — and, as upon a given sign, off they flew and rushed down into the cane-grove right behind my station, where they began immediately to build other nests which they fastened to the tops of the canes, about 8 to 10' above the ground. A few days afterwards they had laid their eggs, 2 to 3 in number, uniform bluish green and of the same size as those of *H. textor*. I never saw one of the birds return to the above mentioned tree again, and I guess that they had been terrified by a colony of ants or a snake, found that morning in the tree, or that they disliked to be observed by me and my servant boys.

Hyphantornis tricolor.

Hyphantornis tricolor, Hartl. J. f. O. 1854, p. 110; id. Orn. W. Afr. p, 126.

Hab. Sierra Leone, Liberia, Gold Coast.

One specimen (adult male) collected near Bavia (St. Paul's).

Notwithstanding all our painstaking we were not able to get more specimens of this beautiful weaver, which is still very rare in collections. It was shot from a high tree, and nothing at all can be said about its habits.

Iris brown, bill black, feet grayish brown.

Euplectes flammiceps.

Euplectes flammiceps, Swains. Birds W. Afr. I. p. 186, pl. 13; — Hartl. Orn. W. Afr. p. 127; — Boc. Orn. d'Ang. p. 335.

Pyromelana flammiceps, F. & Hartl. Vög. O. Afr. p. 414.

Hab. West Africa, from the Senegal to the R. Quanza; Eastern Africa.

A series of adult and young birds collected at Grand Cape Mount.

This is a tolerably common bird in the vicinity of Robertsport. The adult males like to sit on the top of some of the already mentioned cane, where they rest, quite isolated from other birds, and even from their females and young ones, for hours on the same spot. They are apparently proud of their brilliant plumage as they are indefatigable in exposing it in the most obvious manner.

Iris brown, bill of adult black, of young birds flesh-color, as show two specimens, shot in December; feet flesh-color.

Ploceus erythroptus.

Ploceus erythroptus, Hartl. Rev. Zool. 1848, p. 109; — Boc. Orn. d'Ang. p. 319.

Euplectes erythroptus, Hartl. Beitr. Orn. W. Afr. pl. 8.

Foudia erythroptus, Hartl. Orn. W. Afr. p. 129.

Hab. West Africa, from Senegambia to the River Quanza. Collected at Bendo, near the Fisherman Lake.

Shot in brushwood, where they live in company with other small birds. They feed on grass seeds and visit the rice-farms when the rice is getting ripe.

Iris dark brown, bill horn-brown, feet dark flesh-color.

Nigrita bicolor.

Pytelia bicolor, Verzeichn. Brem. Samml. p. 76.

Nigrita bicolor, Sclat. in Jard. Contrib. Orn. (1852) p. 34,

Notes from the Leyden Museum, Vol. VII.

pl. 83; — Hartl. Orn. W. Afr. p. 130; — Boc. Orn. d'Ang. p. 556.

Hab. West Africa, from the Casamanze to the Congo.

Collected at Bendo (Fisherman Lake), where it was met with in brushwood.

Iris blood-red, bill black, feet sooty brown.

Sycobius cristatus.

Malimbus cristatus, Vieill. Ois. chant. pl. 42.

Sycobius cristatus, Hartl. Orn. W. Afr. p. 132; — Boc. Orn. d'Ang. p. 331.

Hab. West Africa, from Liberia to the Congo.

Collected at Bavia, St. Paul's River.

This beautiful bird inhabits the underwood of the virgin forest, from where it visits the brushwood and thickets of old, abandoned farms. In the Cape Mount Country, where other species of *Sycobius* are pretty common, we have never met this bird.

Iris brown, bill and feet black.

Sycobius rubricollis.

Textor rubricollis, Swains. Anim. in Menag. p. 306 (1838).

Euplectes ruforelatus, Fras. Zool. typ. pl. 46.

Sycobius malimbus, Hartl. Orn. W. Afr. p. 132.

Malimbus rubricollis, Elliot, Ibis 1876, p. 461.

Sycobius rubricollis, Boc. Orn. d'Ang. p. 332.

Hab. West Africa, from Liberia to the Congo.

Collected at Soforé Place and near Bendo.

These birds are found in clearings, sitting on isolated trees and stumps, watching for insects. A female bird from Bendo, which I believe to be adult, is exactly like the adult male, except the front which is black, like in the specimen on the back-ground of the above cited plate in Fraser's Zoologia typica. Three full-grown young males from Soforé Place are similar to the above mentioned fe-

male, but have the black front intermixed with red feathers, showing the tendency to become entirely red.

Iris dark brown, bill a very dark blue, feet dark lead-color.

Sycobius scutatus.

Sycobius scutatus, Cass. Proc. Acad. Nat. Sc. Philad. 1849, p. 157; — Hartl. Orn. W. Afr. p. 132.

Malimbus scutatus, Elliot, Ibis 1876, p. 460.

Hab. West Africa, from Sierra Leone to the Gaboon.

Collected at Soforé Place, near Buluma and in the vicinity of Robertsport.

An apparently young male from Robertsport, shot the 5th May, with a flesh-colored bill, has the red crown and nape intermixed with black tips to some feathers, while nearly the entire throat, pure black in the adult bird, is intermixed with numerous red feathers. Another young male, shot at Soforé Place on the 27th of July, does not differ from the adult male except by the dark flesh-colored bill and the chin which is entirely red, while the black throat is also intermixed with red feathers. The habits of this species are the same as in the foregoing one.

Iris in all my specimens dark brown, bill of the adult black, feet grayish brown.

Sycobius nitens.

Sycobius nitens, J. E. Gray, Zool. Misc. I. p. 6; — Hartl. Orn. W. Afr. p. 133.

Malimbus nitens, Elliot, Ibis 1876, p. 463.

Hab. West Africa, from Sierra Leone to the Gaboon.

Collected at Bavia, St. Paul's River.

This bird seems to be still more scarce than *S. scutatus*, which is by no means a common bird. It is still less lively than its congeners and will hardly be seen outside

of the high forest. A male specimen from Bavia has the centre of the breast white, covered with a slight hue of rose-color.

Iris cherry-brown, bill and feet bluish horn-color.

Vidua principalis.

Emberiza principalis, Linn. Syst. Nat. I. p. 313.

Vidua erythrorhynchus, Swains. Birds W. Afr. I. p. 176, pl. 12.

Vidua principalis, Hartl. Orn. W. Afr. p. 136; — F. & Hartl. Vög. O. Afr. p. 428; — Boc. Orn. d'Ang. p. 345.

Hab. The whole of Africa below the Sahara.

Collected near Robertsport.

This bird is very common in old farms where grass and brushwood overgrow the former cultivation, and even in the gardens in the centre of villages. After their breeding time they live in large flocks together in the mentioned places where they feed on the seeds of grasses and weeds. Their vivacious manners, especially their flight with the long waving tail are very amusing. The chin in all Liberian specimens is black.

Iris brown, bill coral-red, feet brownish gray.

Penthetria macroura.

Loxia macroura, Gm. Syst. Nat. I. p. 845.

Vidua (Coliostruthus) macroura, Hartl. Orn. W. Afr. p. 137.

Penthetria macroura, F. & Hartl. Vög. O. Afr. p. 418; — Boc. Orn. d'Ang. p. 340.

Hab. The whole of tropical Africa.

Collected near Robertsport (Grand Cape Mount).

This species is pretty common in the same locality as *Vidua principalis*, however not keeping together in flocks like the latter, but rather alone or in pairs or together with their young ones after they have left the nest. Although they feed much upon grass seeds, they are very often seen

in rice-farms, never mixed, however, as far as I could observe, with other birds.

A young male in changing plumage was shot the 11th of May. Its colors underneath and on the sides of the head are grayish isabel, with brownish shaft-stripes on the feathers of the chest and sides of body, whole upper surface and tail grayish brown, with isabel-colored edges to the feathers of crown, back and scapulars. Quills and wing-coverts black, with a few isabel-colored edges left to the secondaries and wing-coverts, feathers of crown intermixed with some new developed black ones, the olive-yellow superciliar stripe still left, but intermixed with some black feathers, chin and throat entirely black, also the sides of the rump, the vent, thighs and under tail-coverts. Edge of wing and lesser wing-coverts pure yellow, under wing-coverts like in adult specimens. Bill blackish horn-color, lower mandible paler, feet brownish flesh-color, iris brown.

A female, apparently adult, shot 30th September in a very worn plumage, differs somewhat from the description, given, on the authority of Cassin, by Finsch and Hartlaub. The whole under surface of my specimen is isabel-color, tinged with olive-yellow, which color prevails on the eyebrows, throat and chest; thighs and sides of abdomen slight fulvous, upper surface olivaceous, with broad, dark brown shaft-streaks, especially on head; neck, mantle and axillaries. Tail-feathers, quills and larger wing-coverts grayish brown, lesser wing-coverts brown, conspicuously edged with olive-yellow, the primaries narrowly edged outside with silvery-gray. Iris brown, bill and feet pale flesh-color.

Adult male: Iris brown, bill and feet bluish black.

Spermospiza haematina.

Spermospiza haematina (♂) et *guttata* (♀), Vieill. Ois. chant. pls. 67 & 68; — Hartl. Orn. W. Afr. p. 138.

Notes from the Leyden Museum, Vol. VII.

Spermospiza guttata, Boc. Orn. d'Aug. p. 349.

Hab. West Africa, from the Casamanze to the Congo.

Adult male and female, collected near Buluma.

Although both mentioned specimens have not been shot together at the same day, I believe them to belong to the same species, the more as the large collection of both spotted and unspotted specimens from the most different localities, contained in the Leyden Museum, do not furnish the least evidence for their being two different species. Both specimens are shot in brushwood, where they keep close to the ground, living upon grass seeds and insects.

Iris red, eye-lid milky white, bill metallic cyan-blue, tip and edges minium-red, feet sooty brown.

This species does not breed in colonies, as its nest was found alone in the underwood of high forest lying in a fork four feet above the ground. It had the shape of a ball of about 12 cm. diameter with the aperture on one side near the top, and is carelessly built of soft stalks and panicles of grass, without any lining. The nest contained two white eggs, which measured 1,9 cm. in length and 1,3 cm. in width.

Pyrenestes personatus.

Pyrenestes personatus, Du Bus, Bull. Acad. Sc. Brux. 1855, I. p. 151; — Hartl. Orn. W. Afr. p. 139.

Hab. West Africa: Senegambia (Du Bus), Liberia, Gaboon (Rchw.).

A fine series collected near Robertsport.

I found a little colony of these birds in a swamp-grove near Robertsport, at the inner slope of the strand-dune, with about 10 nests, from one of which I have caught an adult male and a breeding female. The nests are very large and consist of a heap of dead reed-leaves, sitting very well hidden in the fork of a thickly leaved, low bush, about 4' above the swamp or the water. A narrow aperture in one side of the nest leads to the cup which

is lined with soft panicles of grass. The eggs, generally 6 in number, are pure white, 1,7 cm. long and 1,3 cm. wide. Birds, nests and eggs were collected in October. Amongst my collected nests exists a double one, viz. one built on the top of the other, the upper one only being inhabited when it was collected.

The fact that I have neither seen nor collected an adult male with black plumage — though I observed the colony during several days and got a whole series of undoubtedly adult males, females and young specimens — weighs very heavy for *P. personatus* being a good species.

The adult male agrees perfectly well with the description and plate 9 in Swainson, Birds W. Afr. (*P. sanguineus*), which is considered to be the female of *P. ostrinus* Vieill. The entire head, neck, breast, sides of body and upper tail-coverts are glossy crimson, while the upper surface of the tail is darker red with a brownish tinge. All the other parts of the plumage are olive-brown. The adult female differs from the male in having the glossy crimson, but faintly extended on the occiput, breast and sides of the body, which latter show but very slight marks of red. All the other parts are olive-brown. The full-grown young male is entirely olive-brown, except the upper tail-coverts and upper surface of tail, which are brownish red without any gloss.

Like *P. coccineus* this species differs from *P. ostrinus* by its smaller size, the wings being 6,2 cm. instead of 8,3 like they are in the latter species. While thus *P. ostrinus* is easily distinct by its larger proportions, it is really difficult if not impossible to say whether a brown-colored small specimen belongs to *P. coccineus* or to *P. personatus*. To make the matter still more intricate, both species inhabit the same countries, as one of Cassin's types of *P. coccineus* came from Monrovia, thus nearly from the same locality as our own specimens.

Iris brown, eye-lid in adult males cobalt-blue, in females and young birds ochraceous, bill in adult males metallic

cyan-blue, in females and young birds dark steel-blue, feet olive-brown.

Pytelia schlegeli.

Pytelia schlegeli, Sharpe, Ibis 1870, p. 482, pl. 14, fig. 2 & 3 (adult male and young).

Hab. Liberia and Gold Coast.

An adult female, collected at Robertsport.

Shot in brushwood, covering an old farm, the 14th of December.

This example, although the only one met with in Liberia, will add somewhat to the knowledge of this exceedingly rare species. As the specimen, described by Mr. Sharpe as the female, is no doubt a young bird, I will adjoin here the description of the adult female.

The upper surface is olive-green, the rump somewhat brighter, but not golden brown as in the male, face ochraceous, throat and chest gray, tinged with olive-green, breast, sides of abdomen and flanks exactly like those of the adult male, centre of abdomen and thighs ashy gray, vent and under tail-coverts olive-green.

Iris dark brown, bill blackish blue at base, tip of both and greatest part of lower mandible rose-color, feet grayish flesh-color.

Amauresthes fringilloides.

Ploceus fringilloides, Lafr. Mag. de Zool. 1835, pl. 48.

Amadina (Spermestes) fringilloides, Hartl. Orn. W. Afr. p. 147.

Amauresthes fringilloides, F. & Hartl. Vög. O. Afr. p. 434.

Hab. West- and East Coast of tropical Africa (Senegal, Gambia, Liberia, Gaboon).

Collected with nests and eggs at Robertsport.

The adult female does not differ from the male; young specimens are uniform brown.

This bird is found in the vicinity of human habitations.

The tolerably large nest is built from the most various materials, as a kind of *Selaginella*, intermixed and lined with soft stalks and panicles of grass. The aperture is always on one side, like in the nests of *Pyrenestes* and *Spermestes*. It generally sits in the fork of a small plum-tree (*Mangifera indica*), an orange-tree or the like, about 5 to 10 feet above the ground, and never in colonies together. The eggs, six in number, are pure white and measure 1,5 cm. in length and 1,1 cm. in width. They were collected in November. After their breeding time these birds assemble, accompanied by their young ones, in large flocks, visiting during the day rice-farms and grassy plains and sleeping during the night, side by side, in reed-fields.

Iris white, upper mandible bluish black, lower one cyan-blue, feet black, soles whitish.

Spermestes bicolor.

Amadina (Spermestes) bicolor, Fras. P. Z. S. 1842, p. 145; id. Zool. typ. pl. 50, fig. 2; — Hartl. Orn. W. Afr. p. 148.

Hab. Liberia and Gold Coast.

A pair, with their nest and eggs from Soforé Place; tolerably common in the Interior of Grand Cape Mount.

This species likes still more human habitations than *A. fringilloides*, as it builds its nest in the same way as the first in plantains and trees middle in Negro villages, even in the roofs of the houses. The nest contained 6 pure white eggs of 1,4 cm. in length and 1 cm. in width, and was collected in August.

The habits of these birds are the same as those of the former species. Principal food grass seeds.

Iris black, bill blue, feet black.

Corythaix macrorhynchus.

Corythaix macrorhynchus, Fras. P. Z. S. 1839, p. 34; — Hartl. Orn. W. Afr. p. 157.

Musophaga macrorhyncha, Schl. Mus. P.-B. Cuculi, p. 76.

Hab. West Africa, from Sierra Leone to the Gaboon.

A large series collected on the banks of the St Paul's and in the Grand Cape Mount Country. A splendid and very lively bird in its wild state, always keeping in the densest crowns of the virgin forest, where it lives in pairs or, after the breeding season, together with its young ones. Shy as it is, it could not easily be found by the huntsman, if it did not betray itself by its crow-like voice, interrupted, now and then, by a mewling, exactly like that of a cat. When not disturbed, these birds can be very noisy, flapping their beautiful red wings and running after each other, like squirrels, along the branches. As their splendid wings would be too obvious to their enemies, they seldom fly very far at once, but advance by running through the foliage of the trees, hidden by the conformity of color between their plumage and that of the leaves. Their food consists of different kinds of wild fruits; insects were never found in dissected specimens.

Young birds have the crest uniform green, instead of edged with white and black, as shows a semi-adult female, collected at Bavia (1st February 1880).

Iris dark brown, bill carmine at base, culmen and tip orange yellow; feet blackish gray. Bare space round the eye crimson.

Turacus giganteus.

Turacus giganteus, Vieill. Enc. Meth. p. 1205; — Hartl. Orn. W. Afr. p. 159; — Boc. Orn. d'Ang. p. 133.

Musophaga gigantea, Schl. Mus. P.-B. Cuculi, p. 77.

Hab. West Africa, from Sierra Leone to Angola; Niam Niam Country (Bohndorff).

Several examples from the St. Paul's and from Grand Cape Mount.

This largest of all plantain-eaters is confined exclusively

to the virgin forest, where it lives, in companies of five or six specimens together, in the crowns of the highest trees, generally out of reach of gunshot. There they play together, especially in the morning and evening, running along the branches to a somewhat exposed point where they proudly stretch out their necks, spreading their wings and flapping up and down their fan-like tails, uttering, at the same time, a clamorous cry, like »cooruah, cooruah, rook, rook, rook". Probably on account of its pride, the Liberians call it »pea-cock" or »pea-fowl". It feeds upon a kind of bush-plum and other wild fruits, of which an enormous quantity is sometimes found in its crop.

Iris blood-red, bill orange-yellow, tip coral-red, feet brownish lead-color.

Buceros elatus.

Buceros elatus, Temm. Pl. Col. 521; — Hartl. Orn. W. Afr. p. 161; — Schl. Mus. P.-B., Buceros, p. 18.

Buceros cultratus, Sundev. Oefvers. K. V. Ac. Förh. 1849, p. 160; — Hartl. Orn. W. Afr. p. 161.

Ceratogymna elata, Elliot, Mon. Buc. 1882.

Hab. West Africa, from Sierra Leone to Gaboon.

A large series, collected along the St. Paul's and at Grand Cape Mount.

The palm-bird, as the Liberians call it on account of its principal food, is, like many of its congeners, a very noisy bird. It keeps commonly in the highest forest-trees, from whence it visits the oil-palms when the palm-nut-season is at its highest (February-May). They live in small families together but seem, when the nestlings are able to keep on the wing and food begins to get scarce in the country, to form large flocks, swarming through the forest but coming back to a regular sleeping-place. We were once fortunate enough to come upon such a spot and were much struck by the lowness of the roosting-places they had chosen. This place was a swamp, surrounded by hills

in the midst of the high forest and covered with high reeds, brushwood and small trees. There they alighted shortly after sunset, about fifty together, fighting eagerly and with a great noise for the most comfortable perches not higher than 10 to 20 feet from the ground. As I wished to spare this place in order to make further observations, I did not shoot amongst them. A few days afterwards, however, a native huntsman who had found the place with the aid of my boy, disturbed their nights rest, and off they went for ever. Their cry is very loud and resembles much the sound of a trumpet, probably on account of the horn which may be used as a kind of sounding board. Their food consists almost entirely of palm-nuts and the fruits of several large kinds of forest-trees.

Iris red, in younger specimens brown, bill of the male black, as well as the basal part of the horn, upper part of the latter whitish horn-color, bill of the female entirely horn-color, feet lead-color, bare skin round the eyes, on chin, throat and gular pouch cobalt-blue.

Buceros atratus.

Buceros atratus, Temm. Pl. Col. 558; — Hartl. Orn. W. Afr. p. 162; — Schl. Mus. P.-B., Buceros, p. 18; — Boc. Orn. d'Angola, p. 113.

Sphagolobus atratus, Elliot, Mon. Buc. 1882.

Hab. West Africa, from Liberia to Angola.

A series collected on the St. Paul's River; not observed at Grand Cape Mount.

In its habits and food not different from *B. elatus*, but by far not as common as the latter.

Iris brick-red, in younger specimens reddish brown, bill grayish black, feet lead-color. Bare skin in male: Back-side of the horn, round the eyes, chin and gular pouch cobalt-blue, skin, as far as covered with feathers,

violet; in female: bare spaces round the eye, chin and gular pouch cobalt, throat whitish, feathered skin violet.

Buceros cylindricus.

Buceros cylindricus, Temm. Pl. Col. 521; — Hartl. Orn. W. Afr. p. 162; — Schl. Mus. P.-B., Buceros, p. 17.

Bycanistes cylindricus, Elliot, Mon. Buc. 1882.

Hab. Liberia and Gold Coast.

Two females, collected near Soforé Place.

This bird seems to be rarer than either of its already mentioned congeners, as we have never found it at Grand Cape Mount. It lives more quietly than any other species of large African Hornbills and hides itself in the thickest crowns of trees.

Iris in the collected specimens reddish brown, bill horn-color, feet brown.

Buceros fistulator.

Buceros fistulator, Cass. Proc. Ac. Nat. Sc. Philad. 1850, p. 68; — Hartl. Orn. W. Afr. p. 162; — Schl. Mus. P.-B., Buceros, p. 16.

Pholidophalus fistulator, Elliot, Mon. Buc. 1882.

Hab. West Africa, from Liberia to Gaboon.

A large series, collected at Soforé Place.

This species is the most noisy of all we met with, and is exceedingly well entitled to bear its name. We saw it only in the rainy months of July, August and September, when it visited in small flocks with a clock-like regularity some fruit-trees, overshadowing our thatch-house in the centre of the virgin forest.

Iris dark brown, bill black, tip and lateral spots at base whitish horn-color, feet and fore-part of tarsus blackish brown, hind part lead-color.

Buceros albo cristatus.

Buceros albo cristatus, Cass. Journ. Ac. Nat. Sc. Philad. I. p. 135, pl. 15; — Schl. Mus. P.-B., Buceros, p. 9.

Buceros (Berenicornis) albo cristatus, Hartl. Orn. W. Afr. p. 163.

Anorrhinus albo cristatus, Elliot, Mon. Buc. 1882.

Hab. West Africa, from Liberia to the Congo.

A fine series of nestlings, semi-adult and adult specimens collected on the St. Paul's and in the district of Grand Cape Mount.

This species lives not like the preceding ones in flocks together, but is, although we frequently met with it, a solitary and quiet bird. It is an exclusive inhabitant of the high forest, where it is said to follow the monkeys and to warn them by mewling tones, exactly like those of a cat, when their situation seems to become dangerous. On this account the Liberians call the species the monkey-bird. Although we bought a pair of nestlings of this species at Bavia at the end of January, we were not able to get any information about the interesting sitting time of these birds. One of them was still but half-fledged when we got it, but after about a week's living at our station, when they died, they had already got nearly their full plumage, which was not different in color from that of adult specimens. Their bills were, when alive, green, blackish at base, iris clear blue, feet grayish horn-color. In adult specimens the bill is black, horny white at the base of the upper mandible, iris yellowish white, feet dark blue, turning into lead-color or black after death.

One of my specimens I shot, together with *B. semifasciatus* and *B. camurus*, on the same tree in a quarter of an hour, when they came successively to make their meal on the bush-plumes with which the tree was covered.

Buceros semifasciatus.

Buceros semifasciatus (Temm. in litt.), Hartl. J. f. O. 1855, p. 356; id. Orn. W. Afr. p. 163; — Schl. Mus. P.-B., Buceros, p. 13.

Buceros fasciatus, Rehw. J. f. O. 1875, p. 13, and 1877, p. 18.

Tockus semifasciatus, Elliot, Mon. Buc. 1882.

Hab. West Africa, from Senegambia to the Gold Coast; Gaboon?

A large series, collected along the St. Paul's River and at Grand Cape Mount, proves this species to be a well-established one, although Dr. Reichenow (l. c.) believes it to be but the not fully adult stage of *B. fasciatus*. Unfortunately I could not obtain quite young specimens, but a not full-grown one has the white to the 2nd and 3rd pair of tail-feathers much smaller than fully adult ones and intermixed with black spots, which peculiarity might lead to the conclusion that in young birds these feathers are entirely black, like Dr. Reichenow observed in young specimens of his *B. fasciatus*. The strongest argument of these feathers never becoming entirely white as is the case in *B. fasciatus*, is given by a very old moulting male, collected at Bavia. This specimen has the fully developed 3rd pair of tail-feathers tipped with white at the usual length of 8 to 9 cm., and also is the 2nd pair, though this latter is freshly moulted and but a little of the black basal part developed. In these half-grown feathers the white of the terminal part is arranged in the same way as in fully developed ones, i. e. it reaches farther up towards the base on the inner web than it does on the outer one, and still farther along the shafts. These two facts will thus lead to the conclusion, that in the first plumage the white tips are gradually obtained by a mere change of color, while moulted feathers have the white tips at once at the usual length. Moreover among more

than 30 specimens shot and examined during my stay in Liberia, there was not one that showed any tendency of the tail-feathers to become entirely white, like Dr. Reichenow thinks they will regularly do in the adult stage of plumage. Certainly his specimens with entirely white tail-feathers represent the adult, those with more or less white on the terminal part, the young stage of the true *B. fasciatus*, which is at once distinguished by the color of the bill, which is red at the point and the lower surface of the lower mandible in the adult stage.

This species of Hornbill is the commonest of all in Liberia. Although an inhabitant of the primeval forest, it visits isolated trees and small groups of trees near the plantations of the Negroes, where it is easily observed by its hoarse, disagreeable cry, which resembles much that of our Magpie. Its principal food consists of palmnuts.

Iris coffee-brown, bill in young specimens entirely yellowish white, in adult ones the point pure black, which color extends farther on at each side along the ridge, at the edge of the bill and from there in an oblique band downward on the lower mandible; feet greenish brown. A young but full-grown female has the partly bare skin on the neck chrome-yellow.

Buceros hartlaubi.

Tockus hartlaubi, Gould, P. Z. S. 1860, p. 380; — Sharpe, Ibis 1870, p. 485; — Elliot, Mon. Buc. 1882.

Buceros Nagtglasii, Schl. Tijdschr. v. Dierk. I. 1863, p. 56, pl. 2; id. Mus. P.-B., Buceros, p. 16.

Hab. West Africa, from Liberia to the Loango Coast.

Male and female, collected at Soforé Place.

A comparison of my two specimens with the type of *B. Nagtglasii* and another example labelled »West Africa" show that they all agree perfectly with both above mentioned descriptions, given by Gould and Schlegel. The description by Schlegel is a good completion of that from

Goold, as it contains some details which have been overlooked by the latter, who has, for instance, omitted to mention the whitish superciliar band, carried on up to the neck and bordering the whole crown of the head.

My female bird from Liberia, undoubtedly a full-grown one, is somewhat smaller than the three male specimens in our Museum, and its much shorter bill is entirely black. In the color of its plumage there exists not the least difference between male and female. The prominence of the bill of the latter is pretty well developed and would enable it to pass for a somewhat younger male.

The measurements of the four specimens under my notice are as follows (in cm.):

	culmen.	wing.	tail.	tarsus.
Males	5,7—6,5	14,5	16,3	2,5
Female	4,7	13,6	14	2,2

Iris brown, bill of male black, with a tinge of blood-red, which color prevails at the tip: bill of female entirely black, feet black.

This species is, still more than *B. albocristatus*, very quiet in all its motions. It never leaves, as I think, the virgin forest, where alone or in pairs it flies noiselessly through the lower branches of the trees and is only occasionally observed by the huntsman. We have never heard a note from it.

Buceros camurus.

Tockus camurus, Cass. Proc. Acad. Nat. Sc. Philad. 1856; — Boc. Orn. d'Ang. p. 541; — Elliot, Monogr. Buc. 1882.

Buceros camurus, Hartl. Orn. W. Afr. p. 267.

Buceros pulchrirostris, Schl. Tijdschr. v. Dierk. I. 1863, p. 74, pl. 4; id. Mus. P.-B., Buceros, p. 15.

Hab. West Africa, from Liberia to the Loango Coast.

Six specimens (two males and four females) collected near Soforé Place.

When Prof. Schlegel, in 1862, established his *B. pulchrostris*, he was well aware of its close relationship with Cassin's *Tockus camurus*, which he stated in the following words: »Il paraît que notre *Buceros pulchrostris* est très-voisin du *Tockus camurus* de Cassin, originaire du Cap Lopez, et qu'il ne s'en distingue en effet que par une taille un peu moins forte, et par son bec noir au dernier quart de sa longueur; mais comme ces caractères sont constants dans les trois individus que nous possédons de cette espèce, comme ceux du *B. camurus* le sont dans les trois individus examinés par Mr. Cassin, nous n'avons pas cru devoir confondre ces deux oiseaux sous un même nom." — Since that time, the Leyden Museum has obtained two specimens of the true *Tockus camurus*, also collected by Du Chaillu at the Cape Lopez and at the Gaboon and by the German Expedition on the Loango Coast. As they had, like Cassin's types, their bills entirely red, they could but confirm Prof. Schlegel's ideas, developed in the above cited passage.

My Liberian specimens now show that Mr. Elliot is right in uniting *B. pulchrostris* with Cassin's *B. camurus*, under the latter name. There is not the least difference in color of plumage between the specimens of the three cited localities. The color of the bill, however, which formed the strongest argument of Prof. Schlegel, shows evidently the identity of both species, as otherwise four of my Liberian birds, with entirely red bills, would belong to *B. camurus*, while the two others, provided with black tips, would belong to *B. pulchrostris*. The following table will show the difference in size between the specimens from the Gaboon, the Gold Coast and Liberia. There seems not to be any remarkable difference in size and color between males and females of the same locality except the larger size of bill in the males. The black tip of the bill is by no means characteristic of one or the other sex, being more probably peculiar to younger specimens of both sexes.

	bill.	wing.	tail.	tarsus.
	cm.	cm.	cm.	cm.
Gaboon:	6,4—6,5	14,7—15,3	14,8—15	3
Gold Coast:	5,4—5,9	14,3—14,6	14,2—15	3
Liberia:	5,8—6,4	13,7—14,6	13,7—14,9	3

(The bills are measured in a straight line from the base of the culmen (front) to the tip.)

Although very rare and not different in its habits from *B. hartlaubi*, this bird is, on account of its more lively colors, especially its beautiful red bill, more easily obtained than the preceding species.

Iris whitish yellow, bill in quite adult stage entirely coral-red, in younger birds with tip and anterior part of culmen black, feet gray.

Psittacus timneh.

Psittacus timneh, Fras. P. Z. S. 1844, p. 38; — Hartl. Orn. W. Afr. p. 167; — Finsch, Papag. II. p. 315; — Schl. Mus. P.-B. Psittaci, Revue, p. 10.

Hab. Liberia and lower parts of Sierra Leone.

Observed and collected along the St. Paul's, as far as Soforé Place, and in the whole district of Grand Cape Mount, as far as Cobolia, on the Marfa River.

Although Dr. Finsch, in his celebrated Monograph of the Parrots, is not at all convinced of its being really a separate species, I have not the least doubt that *P. timneh* is as truly so as *P. erythacus* itself. They live like *P. erythacus*, in large flocks, sometimes of many hundreds, together and keep the whole year the same trees for sleeping-places. These colonies give a peculiar attraction to the vast forest-regions of the Interior. Early in the morning, with the first cock-crow, they leave their roosting places crying, whistling and singing, and scatter over the forest in order to seek for food, which consists of different kinds of wild fruits, especially palm-nuts and the seeds of Tamarinds. When the corn and rice begin

to get ripe, they are sometimes a plague for the farmers, as they eat very much and destroy much more. They return shortly after sunset, some few much later, with the same noise, and it is pretty late when, at last, silence begins to reign in the gigantic sleeping-trees. In the morning as well as in the evening, the flocks keep to their regular routes, but once disturbed by a shot or the like, they will the next time pass the dangerous spot high in the air, or, when disturbed repeatedly, choose another route. They are not easily killed and need a good shot. One of the before mentioned sleeping places I discovered on the Island of Alin, in the St. Paul's River near Soforé Place. As the place was in a swamp, I could not remain there till sunset. Nevertheless I shot several specimens which were preparing for their night's rest, and it was hard work to catch and kill them after they had fallen.

Although this species is very common in Liberia, I was not able to get young specimens of it. Some, probably in a transitional stage of plumage, have some of the wing-coverts of a yellowish or brownish clay-color. The tail-feathers and, in adult specimens, the under tail-coverts are reddish brown, and in one, collected at Buluma near the Fisherman Lake, rusty red, as is mentioned in the original description by Fraser. But never — and we have examined more than fifty specimens — did we find the pale gray general color, the beautiful red tail and the black bill of *P. erythacus*. The Liberian gray Parrot is, moreover, not by far as intelligent and docile as his more southern congener, and is therefore very seldom found in captivity, while *P. erythacus* is frequently brought to Liberia from down the coast by the Krooboys. I regard it as an established fact that *P. timneh* is the northern representative of *P. erythacus*, like *Agapornis swinderniana* for its congener *A. pullaria*. If it is really found at the Ga-boon, as is ascertained by several authors, I cannot say, as we have no gray Parrots from that locality, but it is probable enough that now and then younger specimens

of *P. erythacus* will have been regarded as *P. timneh*. Whatever may be the truth with our *P. timneh*, its real habitat must be recognized to be Liberia and lower Sierra Leone, nearly as far up as Freetown. Which of the two, *P. erythacus* or *P. timneh*, will be found on the Ivory Coast, is still unknown.

The iris of all our obtained specimens was pale yellow till yellowish white, the base of the maxilla pale horn-color, tip and lower mandible black, feet gray, ear-coverts almost black.

Psittacula swinderniana.

Psittacus swindernianus, Kuhl, Consp. Psitt. 1820, p. 62, pl. 2 (fig. mala).

Psittacula swindereni, Finsch, Papag. II. p. 632; — Cab. J. f. O. 1877, pl. 5, fig. 2 (fig. bona).

Agapornis picta, Hartl. Orn. W. Afr. p. 169.

Agapornis swinderniana, Hartl. Ibis 1879, p. 84.

Hab. Liberia.

Eight specimens were collected on the Island of Alin, in the St. Paul's River, near Soforé Place.

After Mr. Schweitzer, who collected 10 specimens near the Junk River, we have been the first to procure this fine species again. Although we seized every opportunity, we were but once fortunate enough to meet with a small flock of these rare birds, which in three days time we had almost entirely extirpated. They were found on the above mentioned, thickly wooded Island, sitting in the top of a very high fruit-tree, and heavy shot had to be used in order to reach them. I suppose they were travelling through the forest in order to seek for food, as many birds do after the young generation has got strong enough to keep on the wing. On account of their color, their small size and the height they generally keep, they are by no means easily discovered. The only cry we heard

utter them was something like the creaking of a rusty hinge.

Our specimens were shot the 31st of May and the 2nd of June. After Dr. Hartlaub's note on this bird in *Ibis* l. c., there is but little to say about the adult stage of plumage. I will only mention that all the tail-feathers are black at the base; the rest of the two central ones is uniform green. The five lateral pairs are better called black, broadly banded across with scarlet and tipped with green. The adult male is not different from the female. The full-grown young male differs from the adult ones by the want of the black collar across the neck, which is only indicated by some black feathers on each side, and by a somewhat duller green color.

Iris yellow, maxilla black, lower mandible bluish horn-gray, feet gray.

Pogonorhynchus hirsutus.

Pogonias hirsutus, Swains. Zool. Illustr. II. pl. 72; id. Birds W. Afr. II. p. 172; — Hartl. Orn. W. Afr. p. 172.

Pogonorhynchus hirsutus, Goffin, Mus. P.-B., Bucco-nes, p. 11.

Hab. West Africa, from Sierra Leone to the Loango Coast.

Four specimens collected at Soforé Place and near Buluma. These birds are regularly found in the borders of high forest, where they live in pairs. They are very sluggish, morose birds, uttering a kind of monotonous song, which the survivor continues with indifference after its mate is shot down, without moving from the spot. They live upon insects and their larvae, picked up from branches and pecked out from under old bark. There is no essential difference between male and female.

Iris carmineous, bill black, feet blackish gray.

Megalaima duchaillui.

Barbatula duchaillui, Cass. Proc. Acad. Nat. Sc. Philad. 1855, p. 324.

Pogonias (Buccanodon) duchaillui, Hartl. Orn. W. Afr. p. 171.

Megalaima duchaillui, Goffin, Mus. P.-B., Buccones, p. 39.

Cladurus duchaillui, Rehw. J. f. O. 1877, p. 17.

Nylobucco duchaillui, Boc. Orn. d'Ang. p. 540.

Hab. West Africa, from Liberia to the Loango Coast.

A pair, collected at Soforé Place, shot in a high tree in the virgin forest, where they sat side by side upon a twig.

Iris cherry-red, bill grayish black, feet lead-color.

Megalaima leucolaima.

Barbatula leucolaima, Verr. Rev. et Mag. de Zool. 1851, p. 263; — Hartl. Orn. W. Afr. p. 173 (except synonym.); — Boc. Orn. d'Ang. p. 539.

Megalaima leucolaima, Goffin, Mus. P.-B., Buccones, p. 46.

Megalaema bilineata, Rehw. J. f. O. 1877, p. 17.

Hab. West Africa, from the Senegal to the Loango Coast.

Collected in the forests behind Monrovia.

Iris yellow, bill and feet grayish black.

Megalaima bilineata Sund., considered identical with *M. leucolaima* by Dr. Hartlaub, l. c. and after him by Dr. Reichenow (Expedition to the Loango Coast), is a well-defined species, as shows a fine male, collected by Wahlberg, in the Leyden Museum. This latter differs from *M. leucolaima* by its considerably larger size, and in the yellow on the wings, which is strongly tinged with green. The measurements of both species are as follows (in cm.):

	wing.	tail.	tarsus.	bill.
<i>M. bilineata</i> :	5,7	3,3	1,6	1,2
<i>M. leucolaima</i> :	4,7	2,3	1,2	1

Megalaima scolopacea.

Xylobucco scolopaceus, Bonap. Consp. Av. I. p. 141; — Boc. Orn. d'Ang. p. 108.

Barbatula scolopacea, Hartl. Orn. W. Afr. p. 174.

Megalaima scolopacea, Goffin, Mus. P.-B., Buccones, p. 47.

Hab. West Africa, from Liberia to the Loango Coast.

Collected near Bavia, also observed at Soforé Place.

Habits the same as in the two preceding species.

Iris pale yellow, bill black, feet grayish green.

Gymnobucco calvus.

Bucco calvus, Lafr. Rev. Zool. 1841, p. 241.

Gymnobucco calvus, Hartl. Orn. W. Afr. p. 174; — Rehw. J. f. O. 1875, p. 8; — Boc. Orn. d'Ang. p. 540.

Megalaima calva (partim), Goffin, Mus. P.-B., Buccones, p. 49.

Gymnocranus calvus, Rehw. J. f. O. 1877, p. 17.

Hab. West Africa, from Liberia to the Loango Coast.

Collected at Soforé Place and near Buluma.

As in all my 6 collected specimens, amongst which adult of both sexes and an immature male, the tufts behind the nostrils are wanting, I incline to the opinion of Drs. Hartlaub and Reichenow, l. c., who separate such specimens specifically from the tufted *G. peli*. Mr. Goffin, l. c., unites both species, on account of a most peculiar freak of chance, all his specimens with tufts at the nostrils (*G. peli*) being males, while all specimens wanting those tufts (*G. calvus*) were females. Though it is easy enough to distinguish adult specimens of both species on account of the above mentioned tufts and the white shaft-

streaks on chest and interscapularies, which streaks are present in *G. calrus*, but wanting in *G. peli*, it is almost impossible to distinguish immature birds of both species, as the mentioned characters are wanting in both of them entirely.

These birds live together in little colonies of 4 to 10 pairs and make their nest-holes, like the woodpeckers, in dead tree-trunks, sometimes three to six pairs in the same trunk. They are as much as I could observe, not by far as sluggish as Dr. Reichenow describes them. I met with them several times in the forest, and always they were very noisy and desirous of fighting, moving quickly from branch to branch till they found a fruit-tree, where the noise became still greater than beforehand. They feed upon several small kinds of wild fruits.

Iris in both sexes grayish brown, bill dirty flesh-color, feet gray, bare skin on the head grayish black.

Trachyphonus goffini.

Capito Goffinii (Schl. in Mus. Bat.), Goffin, Mus. P.-B., Buccones, p. 72.

Trachyphonus goffini, Marsh. Capit. p. 32; — Sharpe, Cat. Afr. Birds, p. 16.

Hab. Liberia and Gold Coast.

Collected near Soforé Place.

The Liberian specimens are not at all different from those from the Gold Coast. They are found in pairs in the brushwood of old farms, where, at short intervals, their deep call »hoop" can be heard. The huntsman, once acquainted with this peculiar note, can approach the birds easily enough, as they are not shy and look very calmly at the barrel directed upon them.

Iris red, bill orange-yellow, bare skin round the eye bluish black, feet grayish brown.

Indicator variegatus.

Indicator variegatus, Less. Tr. d'Orn. p. 155; — Schl. Mus. P.-B., Cuculi, p. 2; — Sharpe, Layard's Birds S. Afr. p. 167.

Indicator major (jun. av.), Hartl. Orn. W. Afr. p. 184.

Indicator stictithorax, Rehw. J. f. O. 1877, p. 110.

Hab. Liberia, Gold Coast, Cameroons; South Africa.

A female only, obtained at Soforé Place.

While the only specimen from West Africa in the Leyden Museum, collected by Pel on the Gold Coast and labelled as a female, is spotted with dirty white all over its lower surface, the Liberian specimen is spotted only on the chest. Chin and throat are dirty white with a narrow dark shaft-streak to each feather. The feathers on breast, sides of body and thighs are grayish green, broadly edged with isabel, which color prevails on the flanks and still more on the under tail-coverts. Centre of abdomen and vent entirely isabel. Whole upper surface green, forehead not speckled with white.

Iris reddish brown, bare space round the eye cobalt-blue, bill horn-brown, feet green. Wing 9,6 cm., tail 6,5, tarsus 1,5, bill 1,3 (from front). Its cry is loud and shrill. Although bees-nests are very abundant in the forests round Soforé Place, we never saw this bird in the quality of a Honey Guide. The stomach contained some hard shells of beetles.

Mesopicus pyrrhogaster.

Picus (*Chloropicus*) *pyrrhogaster*, Malh. Rev. Zool. 1845, p. 399.

Dendropicus (*Mesopicus*) *pyrrhogaster*, Hartl. Orn. W. Afr. p. 180.

Mesopicus pyrrhogaster, Hargitt, Ibis 1883, p. 419.

Hab. West Africa, from Sierra Leone to the Gold Coast. Collected in the forests behind Monrovia.

Iris brown, bill lead-color, feet bluish black.

Notes from the Leyden Museum, Vol. VII.

Dendropicus lugubris.

Dendropicus lugubris, Hartl. Orn. W. Afr. p. 178; — Hargitt, Ibis 1883, p. 445, pl. 12, fig. 2.

Hab. West Africa, from Liberia to the Gold Coast.

One specimen (adult ♂) collected in the forests behind Monrovia.

Iris carmineous, bill grayish black, feet grayish green.

Campothera maculosa.

Picus maculosus, Valenc. Dict. Sc. Nat. XI. 1826, p. 173 (♀); — Rehw. J. f. O. 1876, p. 95.

Dendromus brachyrhynchus, Swains. Birds W. Afr. II. p. 160 (nec Hartl. Orn. W. Afr. p. 182).

Dendropicus olivaceus (Gray), Hartl. Orn. W. Afr. p. 177.

Campothera vestita (♀), Cass. Proc. Ac. Nat. Sc. Philad. 1863, p. 197; id. Journ. Acad. Philad. 1863, p. 458, pl. 51.

Campothera maculosa, Hargitt, Ibis 1883, p. 475, and *C. vestita*, p. 479.

Hab. Senegal, Sierra Leone, Liberia, and Gold Coast where it represents the nearly allied *C. permista* from farther down the Coast.

Two males and two females, amongst which a pair, shot near its nest in the forests behind Monrovia.

One of my collected females agrees in every respect with Cassin's description of *C. vestita*, i. e., the other has the back, axillaries and wing-coverts slightly sprinkled with fulvous shaft-streaks, occasionally enlarging to one or two fulvous spots on each feather. The male of the mentioned pair is spotted in the same manner, while the female belonging to it has no spots at all. The males only differ from the females by having the feathers on the upper surface of head and neck tipped with crimson instead of pale fulvous. The under wing-coverts in all four specimens are uniform pale yellow, faintly tinged with fulvous or golden-yellow. Length of wing 9,8 to 10,2 cm., tail 6,5 cm.

The nest-hole did not differ from those of other Woodpeckers.

Iris chestnut-brown, bill grayish horn-color, feet grayish green.

Campothera caroli.

Chloropicus caroli, Malh. Rev. et Mag. de Zool. 1852, p. 550.

Dendromus (Pardipicus) caroli, Hartl. Orn. W. Afr. pp. 182 & 274.

Campothera caroli, Hargitt, Ibis 1883, p. 480.

Hab. West Africa, from Liberia to the River Quanza (the latter locality on the authority of Mr. Barbosa du Bocage).

An adult female, collected near Bavia.

This specimen agrees perfectly well with Mr. Hargitt's description (l. c.) of the adult male, except the crown, which is dark olivaceous green instead of olive brown and tipped with red. The superciliary stripe and under wing-coverts are verdigris, the rounded spots on the lower surface, those on chin and throat not excepted, are ochraceous buff with a greenish tinge.

Iris brown, bill horn-gray, feet grayish green.

Campothera nivosa.

Dendromus nivosus, Swains. Birds W. Afr. II. p. 162; — Hartl. Orn. W. Afr. p. 183.

Dendrobates congicus, Boc. Orn. d'Ang. p. 535.

Campothera nivosa, Hargitt, Ibis 1883, p. 482.

Hab. West Africa, from the Casamanze to the Loango Coast.

Two males, collected near Soforé Place and Robertsport.

The round spots on the under surface in both of our Liberian specimens are ochraceous buff, tinged with green, like in the foregoing species; ear-coverts, sides of the neck and under wing-coverts of the specimen from Soforé Place

verdigris; in that from Robertsport the ear-coverts are paler green, the under wing-coverts yellowish buff.

Iris brown, bill grayish horn-color, feet olive-green.

The specimen from Robertsport was shot from the nest in a bosquet that covered a swamp right behind the beach. The nest-hole, in an old tree about 8' from the ground, contained two pure white, conical eggs of 2 cm. length and 1,5 cm. width.

Centropus francisci.

Centropus francisci, Bonap. Consp. I. p. 107; — Hartl. Orn. W. Afr. p. 186; — Schl. Mus. P.-B. Cuculi, p. 71; — Sharpe, P. Z. S. 1873, p. 621.

Hab. West Africa, from Liberia to the Cameroons.

A nearly adult, full-grown female, in transitional stage of plumage, from Bavia (St. Paul's), and a nestling from Buluma (Grand Cape Mount).

Both these specimens show in all important points the same distribution of color as the adult bird. They are, however, distinguished from the latter by narrow black bands across the tips and inner webs — in the nestling also on the outer ones — of the primaries and the whole surface of the secondaries, axillaries and wing-coverts (in the fully adult specimens, contained in the Leyden Museum the black bars are entirely wanting). The nearly adult female has the feathers on head, throat and neck greenish black, those of the latter fulvous at base, all of them speckled with white along the shafts and intermixed with many black-shafted steel-blue ones (the color of the adult). A patch on each side of the head behind the ear is fulvous, another smaller one on the throat dirty white. These peculiarities might lead to the conclusion, that the head and neck of the young birds must be fulvous, with white shafts to all the feathers, and that this color would change successively, beginning at the tips, into greenish black, which later would give way to the blue gloss and

the black shafts of the fully adult stage. Might there not be concluded by analogy that the same will be the case with the green-glossed *C. senegalensis* and the blue-glossed *C. monachus*, which latter would then turn out, as Schlegel and others already suggested, to be the fully adult *C. senegalensis*?

It is now, after all, very astonishing that the afore mentioned nestling, whose feathers on the forehead, throat, abdomen and tail are just making their appearance, has its feathers on head and neck entirely greenish black, without being intermixed with any brown based or entirely brown ones. The shafts are glossy black, those of the neck with two white speckles each. Having no more material fit to help me in resolving this question, I cannot but imagine that in the male nestlings the greenish black plumage on head and neck will be developed at once, whilst these parts in the females would first be fulvous brown, turning afterwards into greenish black and finally acquire the steel-blue gloss of the adult bird. Having called the attention of Mr. Stampfli upon this subject I shall, as I hope, soon be able to dispose of a number of specimens, sufficient to settle this interesting question.

The habits of this and the following species have been so repeatedly spoken of that I have nothing to add, except that the nest with the above mentioned young bird was found in high grass amongst brushwood, about a foot above the ground. It is very voluminous and consists of carelessly heaped up grass and reed-leaves. It was found the 6th of December and contained two nestlings, which we tried to keep alive, but one got lost the same day, and the other died a few days afterwards.

Iris of the nearly adult bird red, of the nestling grayish brown, bill black, feet bluish gray.

Centropus senegalensis.

Cuculus senegalensis, Linn. Syst. Nat. I. p. 169.

Notes from the Leyden Museum, Vol. VII.

Centropus senegalensis, Hartl. Orn. W. Afr. p. 187; — F. & Hartl. Vög. O. Afr. p. 526 (partim); — Sharpe, P. Z. S. 1873, p. 617; — Boc. Orn. d'Ang. p. 149.

Centropus monachus, Schl. Mus. P.-B. Cuculi, p. 72 (partim).

Hab. West Africa, from the Senegal to the Quanza; North Eastern, Eastern and Southern Africa.

Collected along the St. Paul's and at Grand Cape Mount.

As only adult specimens were collected, I cannot add anything to the knowledge of the group, united by Schlegel, Finsch and Hartlaub, but again considered to be three different species by recent authors. All my Liberian specimens have a green gloss on head and neck.

The cry of this as well as of the preceding species, has earned them the name of »Doodoo" amongst the Natives and the Liberian settlers. It lives in brushwood and is regularly found in the vicinity of human habitations.

Iris red, bill black, feet lead-color.

Phoenicophaës aeneus.

Cuculus aereus, Vieill. Nouv. Dict. d'Hist. Nat. VIII. p. 229.

Zanlostomus aereus, Hartl. Orn. W. Afr. p. 187; — F. & Hartl. Vög. O. Afr. p. 525 (part.); — Rehw. J. f. O. 1875, p. 2; — Boc. Orn. d'Ang. p. 147.

Phoenicophaës flavirostris (Swains.), Schl. Mus. P.-B. Cuculi, p. 50.

Ceuthmochares aeneus, Sharpe, P. Z. S. 1873, p. 610; id. Layard's Birds S. Afr. pl. 5.

Hab. West Africa, from Senegambia to Angola.

Collected along the Fisherman Lake.

Only blue specimens were obtained. Since Prof. Schlegel has separated the western form (*flavirostris*) from the southern (*aereus*) l. c., there has been obtained in 1872, a very pronounced glossy green specimen, not distinguishable from the South African bird, said to come from the

Gambia. Having no more specimens in our collection to support this fact, I think it better not to attach too much importance to it, because there is not sufficient certainty of its really coming from the place mentioned. A plate with good figures of both *P. aeneus* and *australis* is given by Mr. Sharpe in his Birds of South Africa.

Iris carmineous, bill lemon-yellow, a circle round the eye grass-green, bare skin ultramarine, feet black.

Coccytes cafer.

Coccytes cafer (Licht.), Sharpe, P. Z. S. 1873, p. 596.

Coccytes afer (Leach), Schl. Mus. P.-B., Cuculi, p. 44.

Oxylophus ater (Steph.), Hartl. Orn. W. Afr. p. 188.

Hab. Tropical and Southern Africa.

Collected at Bavia, on the St. Paul's River.

This bird is pretty common in all the places we have visited, and keeps by preference in brushwood and the skirts of the high forest in the vicinity of the rivers.

The plumage of two young specimens is in a well-advanced state of change, showing a fully developed alar speculum and being intermixed all over, especially on crest, throat and wings, with feathers belonging to the adult plumage. One of these specimens was shot in January, the other in March.

Iris grayish brown, bill black, feet lead-color.

Chrysococcyx cupreus.

Cuculus cupreus, Bodd. Tabl. Pl. Enl. p. 40; — Schl. Mus. P.-B., Cuculi, p. 31; — Sharpe, P. Z. S. 1873, p. 591.

Chrysococcyx auratus, Hartl. Orn. W. Afr. p. 190.

Chrysococcyx cupreus, F. & Hartl. Vög. O. Afr. p. 522; — Rchw. J. f. O. 1875, p. 6; — Boc. Orn. d'Ang. p. 143.

Hab. Tropical and Southern Africa.

Collected in the forests behind Monrovia.

This splendid bird is frequently met with in old abandoned farms.

Iris and orbit red, bill black, paler at the base of the lower mandible, feet lead-color.

Treron calva.

Columba calva, Temm. & Knip, Fig. p. 35, pl. 7.

Treron crassirostris, *calva* et *nudirostris*, Hartl. Orn. W. Afr. p. 192.

Treron calva et *nudirostris*, Schl. Mus. P.-B., Columbæ, p. 46 and 47.

Treron calva, Boc. Orn. d'Ang. p. 379; — Shelley, Ibis 1883, p. 267.

Hab. Western and Eastern tropical Africa.

Collected at Soforé Place and near the Fisherman Lake.

The late Prof. Schlegel based his both above cited species upon a slight difference in color and size, without attaching any importance to the more or less bare front in the different specimens. My Liberian specimens now seem to form a link between both species, being similar to *T. nudirostris* in color and to the larger *T. calva* in size, and so I fully agree with Capt. Shelley, who unites all three above mentioned species under the name of *calva*.

These birds seem to live in pairs in the vast forest-regions of the Interior during their breeding season, but afterwards they appear in large flocks together in the coast region, where they feed for a great part upon the buds of the Mangrove.

On that reason the Liberians call it the Mangrove Pigeon. Excepting the domestic fowl this is the only bird which is sold and used for food in Monrovia.

Iris blue, surrounded by a rose-colored rim, base of bill coral-red, tip bluish horn-color, feet yellow.

Columba uncinata (Plate 6).

Columba uncinata, Cass. Proc. Acad. Nat. Sc. Philad. 1859, p. 143; — Shelley, Ibis 1883, p. 277.

Notes from the Leyden Museum, Vol. VII.

Hab. Liberia and Gaboon.

A single specimen (♀) collected at Soforé Place.

As this specimen agrees in every respect with the plain description given by Cassin, l. c., I have nothing to add to it. This fine Pigeon is certainly an exceedingly quiet or rather rare bird, as the captured specimen is the only one we ever saw. It was shot on the large and thickly wooded island Alin, near Soforé Place, in the St. Paul's River. Not acquainted with Cassin's description, I thought it at first a new species, but notwithstanding all our painstaking we were not able to procure more specimens.

Iris red, and also the naked space round the eye, bill blackish, point pale horn-color, feet gray.

Columba iriditorques.

Columba iriditorques, Cass. Proc. Acad. Nat. Sc. Philad. 1856, p. 254; — Hartl. Orn. W. Afr. p. 267; — Schl. Mus. P.-B., Columbæ, p. 69.

Turturoena iriditorques, Shelley, Ibis 1883, p. 291.

Hab. West Africa, from Liberia to the Gaboon; St. Thomas. Two specimens obtained near Soforé Place.

There is nothing to add to Cassin's and Capt. Shelley's description of this interesting species, except the color of the iris, bill and feet. Both specimens were shot on the ground in a thicket of low bush. We never observed them in high forest.

Iris pale rose-color, bill blue at the base, with horny yellow point, feet flesh-color.

Turtur semitorquatus.

Columba semitorquata, Rüpp. Neue Wirbelth. Vög. 1835, p. 66, pl. 23.

Turtur erythrophrys, Swains. Birds W. Afr. II, p. 207, pl. 22; — Hartl. Orn. W. Afr. p. 195.

Notes from the Leyden Museum, Vol. VII.

Turtur erythrophrys et *Levaillantii*, Schl. Mus. P.-B., Columbæ, p. 121.

Turtur semitorquatus, F. & Hartl. Vög. O. Afr. p. 541; — Boc. Orn. d'Ang. p. 383; — Shelley, Ibis 1883, p. 303.

Hab. The whole African continent south of about 41° N. lat. (Shelley).

Collected in the Grand Cape Mount Country.

This species of *Turtur*, the only one obtained in Liberia, is plentiful wherever open country exists, especially in grass fields, intermixed with bosquets, on cultivated land, especially near the water-side. Its food consists generally of grass seeds. Its nest is built on trunks or branches in brushwood beside or even in swamps, about 4' above the ground or the water. It consists, like all Dove's nests, of a few loosely arranged twigs, just close enough to prevent the eggs from dropping through and, for the size of the bird, rather small. The eggs, two in number, are pure white and measure from 2,9, to 3,2 cm. in length and from 2,2 to 2,3 cm. in width. They were collected in December.

Iris brick-red, naked space round the eye and the feet carmineous, bill black.

Peristera puella.

Peristera puella, Schl. Bijdr. tot de Dierk. 1848, p. 17, pl. 5; — Hartl. Orn. W. Afr., pp. 198 & 275; — Cass. Proc. Ac. Nat. Sc. Philad. 1859, p. 143.

Chalcopelia puella, Shelley, Ibis 1883, p. 321.

Hab. West Africa, from Liberia to the Gaboon.

Collected at Bavia and Soforé Place.

This beautiful Dove, hitherto only recorded from the Gold Coast and the Gaboon is by no means common in Liberia, where it lives very quietly on the ground in dense brushwood. In the high forest it was never found. Two specimens only were collected. The male was caught in a

snare (Bavia), the female I shot near our Station at Soforé Place. No sexual difference can be observed.

Iris dark brown, bill dark horn-brown, tip flesh-color, feet carmineous.

Peristera afra.

Columba afra, Linn. Syst. Nat. 1766. I. p. 284.

Peristera (Chalcopteryx) afra, Hartl. Orn. W. Afr. p. 197; — Schl. Mus. P.-B., Columbæ, p. 144.

Chalcopteryx afra (Bp.), Boc. Orn. d'Ang. p. 389; — Shelley, Ibis 1883, p. 323.

Hab. The whole of Africa south of about 17° N. lat.

Collected in the Grand Cape Mount Country.

One of the commonest birds in the coast region, where it is met with in grass plains, farms, at the waterside, but especially in the vicinity of the Negro settlements, where nearly the whole day their well-known »hoop, hoop» can be heard. They seem to live entirely upon grass seeds. Their nests are found in thickets and are built in the same way as those of *Turtur semitorquatus* but much neater and thicker than those of the latter. The two eggs are white with a yellowish hue and measure 2,2 cm. in length and 1,7 cm. in width. They were collected in December.

Iris dark brown, bill, with the exception of the yellow point, and feet red.

Peristera tympanistris.

Columba tympanistris, Temm. & Knip, Fig. I, p. 80, pl. 36.

Peristera (Tympanistris) tympanistris, Hartl. Orn. W. Afr. p. 197; — Schl. Mus. P.-B., Columbæ, p. 143; — Boc. Orn. d'Ang., p. 393.

Tympanistris tympanistris, Shelley, Ibis 1883, p. 326.

Collected along the St. Paul's River and near the Fisherman Lake.

Although far from being a common bird in Liberia, this Dove was occasionally met with at most of our hunting stations. In its manners it differs somewhat from the other Ground Doves, as we found it several times sitting in high forest trees.

Iris brown, bill blackish, feet red.

Numida cristata.

Numida cristata, Pall. Spic. zool., p. 15, pl. 2; — Hartl. Orn. W. Afr. p. 199; — F. & Hartl. Vög. O. Afr. p. 572; — Boc. Orn. d'Ang. p. 399.

Hab. West Africa, from Sierra Leone to Benguella, Eastern Africa.

Collected at Bavia and Buluma.

Although a well-known bird throughout Liberia, the Crested Guinea Fowl is only obtained with difficulty, on account of its extreme shyness and ability in hiding itself, whenever it is occasionally met with. We have never seen it on open plains, but always killed it while watching for Antelopes and the like in brushwood or high forest. Now and then it is caught in snares, especially in narrow passages through dense brushwood.

Iris in adult specimens grayish brown, naked skin on head and neck cobalt-blue, except chin and throat, which are minium-red, bill horny yellow, blue at the base, feet brownish lead-color.

An immature specimen from Buluma has the head feathered, the plume not developed, and the iris dark brown.

Agelastes meleagrides.

Agelastes meleagrides (Temm.), Bonap. P. Z. S. 1849, p. 145; — Schl., Handl. Dierk. 1857, Vog. fig. 57; id. de Dierentuin, 1872, p. 220, with fig.

Agelastus meleagrides, Hartl. Orn. W. Afr. p. 200.

A male specimen, collected at Soforé Place.

As this specimen was bought from a Native who had trapped it in a bush-path, nothing can be recorded about the habits of this very interesting and exceedingly rare species. The man could only tell me how it was caught and that the bird was well-known amongst the Natives but very rare everywhere. This specimen was the only one we ever got, in spite of all our efforts to get more.

Iris brown, bill greenish horn-color, bluish at base; naked skin on head and neck pale rose-color, of lower neck blue, white feathers on lower neck, chest and interscapular feathers white, with a rather violet hue; feet grayish olive.

Francolinus ahantensis.

Francolinus ahantensis, Temm. Bijdr. tot de Dierk. 1854, p. 49, pl. 14. — Hartl. Orn. W. Afr. p. 202.

Hab. Liberia and Gold Coast.

Collected at Buluma, near the Fisherman Lake.

This bird was purchased from a Native who caught it, as he said, in a trap, in high forest. I am tolerably sure that a Francolin, shot at in the forests near Soforé Place, but not obtained, belonged to this species. As I roused it unexpectedly from the ground near a huge Cotton-tree, I immediately sought for its nest and found in a cavity between two prominent roots a fresh egg which undoubtedly belonged to the bird in question.

This egg is reddish brown in color, slightly sprinkled with violet, and much paler towards the poles, and measures 4 cm. in length and 2,6 cm. in width.

The iris of the bird is brown, bill coral-red, culmen black, feet, toes and claws pale coral-red.

Francolinus Lathamii.

Francolinus Lathamii, Hartl. J. f. O. 1854, p. 210; id. Orn. W. Afr. p. 202; — Boc. Orn. d'Angola, p. 411.

Francolinus Peli, Temm. Bijdr. tot de Dierk. 1854, p. 50, pl. 15; — Schl. Handl. Dierk. 1857. Vog. fig. 58.

Hab. West Africa, from Sierra Leone to the Loango Coast. Collected at Bavia and Soforé Place.

This Francolin is, like the former species, an inhabitant of the forest region, where it is found occasionally scratching, like fowls, the ground in search for insects. We have never found them in coveys together.

Iris brown, bill dark horn-color, feet orange-yellow.

Oedicnemus vermiculatus.

Oedicnemus vermiculatus, Cab., v. d. Decken's Reisen, III. p. 46, pl. 16; — F. & Hartl. Vög. O. Afr. p. 622; — Boc. Orn. d'Ang. p. 423.

Hab. West Africa, from Liberia to the Cunene River; Eastern Africa.

Two specimens (males) were collected; one near the Fisherman Lake, the other on a sand-bank before the mouth of the Marfa River, on the 18th of August.

This species is closely allied to *O. crepitans*, from which it may easily be distinguished by its much longer and stouter bill and the much larger shaft-streaks on the interscapulary feathers. The vermiculations on the back are very faintly marked in both our specimens, so that the powerfull bill would have formed a much better ground to base the name of the species upon. The specimen shot in March near Buluma has the general color of its upper parts rufous, the other, shot in August, is grayer, probably on account of its worn plumage, which has lost the fulvous edges to the feathers.

This species, the only one of the genus met with in Liberia, resorts especially to bare sandbanks, which are plentiful before the nearly united mouths of the Grand Cape Mount-, Marfa- and Sugary Rivers, and is only found along the Fisherman Lake during the dry season, when the water of this lake, sweet during the rains, be-

comes salt and is then populated for the most part by a sea- and brack-water-fauna. These birds, however stupid they at first seem to be, are very difficult to approach within gun-shot. They feed upon small crustaceous animals.

The measurements of these birds are as follows: Bill from front 5,4 cm., from gape 6,5, wing 20, tail 11, tarsus 8, middle toe 3,3.

Iris yellow, bill in live birds black, base of bill, eye-brows, legs and feet pale yellowish green.

Glareola megapoda.

Glareola megapoda, G. R. Gray, List Spec. Birds Br. Mus., III, p. 62 (1844).

Glareola megapodia, F. & Hartl. Vög. O. Afr. p. 636.

Glareola nuchalis liberiae, Schl. Notes Leyd. Mus. 1881, p. 58.

Hab. Liberia; Niger.

A large series collected on the St. Paul's River, the Fisherman Lake and the Marfa River.

This fine Pratincole is very closely allied to *G. nuchalis*, described by Gray, after a specimen from the upper Nile (P. Z. S. 1849, p. 63; Aves, pl. IX), but constantly distinguished by its rufous instead of white collar. When obtaining the first specimen, I thought it to be a local race of *G. nuchalis* (*G. megapoda* being unknown to me), and Prof. Schlegel, in his above cited note on the zoological researches in Liberia, mentions it as *G. nuchalis liberiae*. While preparing this paper, I fancied my bird might be *G. megapoda*, the type of which »an immature bird in rather bad condition” is still preserved in the British Museum, and which is believed to be distinct from *G. nuchalis* by Drs. Finsch and Hartlaub, l. c. Having, however, neither a specimen of *G. megapoda* nor of *G. nuchalis* at my disposal, I wrote to Mr. Sharpe about the matter, who kindly answered me as follows: »The type of *G. nuchalis* is in the Museum still. It is like the plate,

with the exception that the white on the wing-coverts does not exist. It is really caused by the white bases to the primaries! The young bird from the Niger is certainly an immature *G. megapoda*, which has a rufous collar, when adult." It is upon this authority that I apply the name of *Glareola megapoda* to my Liberian Pratincoles. As this species seems to have never been described — the above cited list containing merely the name — I add here a plain description of my adult specimens from Liberia.

Upper surface, chin, throat, sides of head, breast, sides of body and under wing-coverts brownish gray, slightly tinged with shining olive; abdomen ashy white, upper and under tail-coverts pure white, some of the longest of the latter, even in fully adult birds, more or less largely tipped with dark brown; quills dark brown, primaries with white bases to the inner webs in the males, without any white in the females, basal half of the inner web of the secondaries in both sexes white, also the tips of the innermost under wing-coverts. An adult female, the ovary of which contained fully developed eggs, has the gray feathers on the edge of the wing mixed with a few pure white ones. The slightly furcated tail is dark brown, glossed with green, the innermost pairs occasionally tipped with white; a large basal space of the tail-feathers white, which color gradually increases in extent towards the outermost pair, which is, except the tip and a narrow strip on the edge of the outer web, entirely white. Lores black, a broad collar round the nape rufous, continued, on each side, by a white stripe, which runs above the ear-coverts till behind the eye and from there below the eye to the gape.

Iris dark brown, bill coral-red, point black, feet coral-red.

No difference between male and female, except the above mentioned one. Wing 13,7—14,4 cm.; tail: outermost pair 5,7, innermost 4,5; tarsus 1,8, middle toe 1,4, bill (culmen) 1.

While staying at Bavia, we found a great number of these birds inhabiting the numerous bare, rocky islands

and sand-banks in the St. Paul's River, opposite to our hunting station. They were never seen on the banks of the large river, but very much, especially in the morning and evening, in company with *Waldenia nigrita*, on the wing above the water, hunting after insects. Except a few beetles, we never found anything in their stomachs. When alarmed, they assumed a very ungraceful, erect attitude. It was hard to get within gun-shot of them and, as we had to shoot at them from a small canoe, they were not easily obtained.

On my last visit to the islands, the 15th of March, I found their nests, if this expression may be used, one of them with two, the others with one egg each. In fact, the nests were nothing but a somewhat cup-like hole, scratched in the hot sand near a piece of rock, without any lining. Unfortunately we lost our canoe the evening of the same day, and as the river was rising very rapidly on account of the heavy rains, we could not reach the islands swimming in search of the eggs, as we otherwise should have done.

The eggs are dull grayish green and thickly covered with irregular earthy brown spots. Length 2,8 cm., width 2,1.

Some few specimens of this bird were found on an inaccessible rock between two rapids near Soforé Place.

Vanellus inornatus.

Vanellus inornatus, Swains. Birds W. Afr. II, p. 239; — Hartl. Orn. W. Afr., p. 212; — Schl. Mus. P.-B., Cursorres, p. 63.

Chettusia inornata, Rchw. Journ. f. Orn. 1874, p. 381; — Boc. Orn. d'Angola, p. 425.

Hab. West Africa, from the Gambia to the Congo.

Collected at Buluma, where during the months of December and January it regularly visited newly made farms, in small flocks of 5 to 7 specimens. Their habits are exactly like those of *Vanellus cristatus*; when disturbed, they fly up

with great noise and will never come down to the same spot again.

Iris orange-yellow, bill black, feet reddish brown.

Lobivanellus albiceps.

Vanellus albiceps, Gould, P. Z. S. 1834, p. 45.

Sarciophorus albiceps, Fras. Zool. typ. pl. 64; — Boc. Orn. d'Ang. p. 428.

Lobivanellus albiceps, Hartl. Orn. W. Afr. p. 214; — Sharpe, Layard's Birds S. Afr. p. 667.

Hab. West Africa, from Liberia to the Congo; South East Africa, Zambesi.

Collected on the St. Paul's River near Soforé Place, and on a sand-bank below Cobolia, on the Marfa River.

It is very peculiar that these birds keep in small flocks to some well-known spots, either rocky islands or sand-banks in the rivers tolerably far back in the Interior, where the water runs very fast. On the St. Paul's there was only one spot where we ever saw them, and the same was the case with the bank mentioned in the Marfa River. The Natives told me that they stay there for years and are never seen on other similarly situated spots in the same river. They can, though very watchful, be shot tolerably easy as they fly regularly from one end of the bank or island to the other, uttering loud cries. On a trip up the Marfa River I shot, out of about 8 to 12 that inhabited the very long bank, three specimens from my canoe in passing by, without the rest feeling obliged to leave the bank. All three were adult males in full breeding plumage. I fancied that the females were breeding on the same bank, but there was, unfortunately, no time to stop and seek for them. A native war, that broke out shortly after that trip, prevented me from paying another visit to that part of the country. The small colony in the St. Paul's River inhabited a rocky island between two rapids and was inaccessible to us. Some specimens were shot on the wing,

but only one, a young male, could be obtained. The lobes of this specimen are very small, the gray color on the sides of the head and neck has a fulvous tinge, the color of the back and tertiaries is pale fulvous instead of grayish brown, feet yellow. These birds feed upon small Crustacea, Molluscs and Insects.

Iris pale yellow, bill and lobes orange-yellow, the point of the first black, feet pale grass-green.

Charadrius hiaticula.

Charadrius hiaticula, Linn. Syst. Nat. I. p. 253 (1766); — Schl. Mus. P.-B., Cursores, p. 26; — F. & Hartl. Vög. O. Afr. p. 657.

Aegialitis hiaticula, Boc. Orn. d'Angola, p. 431.

Hab. Europe, the whole of Africa, Asia, Australia.

Collected along the beach near Robertsport, and on the banks before the mouth of the Marfa River.

This bird seems to visit Liberia only in the winter and to arrive there in October. As in Europe, this bird is only found on bare sandy banks along rivers and the sea-shore.

Iris dark brown, bill orange-yellow, with black point, feet pale flesh-color.

Charadrius cantianus.

Charadrius cantianus, Lath. Ind. Orn. Suppl. p. 66 (1801); — Schl. Mus. P.-B., Cursores, p. 31.

Charadrius littoralis (Bechst. 1809), F. & Hartl. Vög. O. Afr. p. 652.

Hab. Europe, whole of Africa, Asia, America.

A young male in first autumn plumage, collected on the sea-shore near Robertsport, the 23rd of October.

Iris dark brown, bill black, feet blackish gray.

Ardea ardesiaca.

Ardea ardesiaca, Wagl. Syst. Av. Ard. sp. 20; — Hartl. Orn. W. Afr. p. 222; — Schl. Mus. P.-B., Ardeae, p. 10; — Boc. Orn. d'Ang. p. 440.

Ardea calceolata, Du Bus, Bull. Acad. Brux. IV. p. 39, pl. 3; — Hartl. l. c.

Ardea flavimana, Sund. Oefv. Akad. Förh. 1850, p. 111.

Hab. The whole of Africa below the Sahara; Madagascar.

This Heron was never found in flocks together, as was the case with *A. atricapilla*. It rather prefers to sit singly or in pairs in marshy, not too thickly wooded places along creeks and rivulets.

Iris chestnut, bill black, tarsi black, toes yellow, bare skin round the eye black.

Ardea alba.

Ardea alba, Linn. Syst. Nat. I. p. 239; — F. & Hartl. Vög. O. Afr. p. 683.

Ardea flavirostris et *melanorhyncha*, Hartl. Orn. W. Afr. pp. 220 & 221.

Ardea alba et *egretta*, Schl. Mus. P.-B., Ardeae, pp. 16 & 17.

Herodias alba, Boc. Orn. d'Ang. p. 442.

Hab. South of Europe and Asia; the whole of Africa, Australia, America.

Collected near the Fisherman Lake, where it is not seldom seen fishing in the shallow water or sitting on the clumps of Mangroves which partially cover the banks of the lake.

Iris and bill yellow, tip of maxilla blackish, feet black.

Ardea gularis.

Ardea gularis, Bosc, Actes Soc. d'hist. nat. Paris. I. p. 4, pl. 2; — Schl. Mus. P.-B., Ardeae, p. 23.

Ardea gularis et *schistacea*, Hartl. Orn. W. Afr. p. 221.

Notes from the Leyden Museum, Vol. VII.

Hab. Northern half of Tropical Africa and Madagascar.
Collected along the Fisherian Lake.

This Heron is very common on the Mangrove-trees along the Fisherman Lake, where it fishes in the small backwaters, left by the retreating tide. Although we have observed and shot a great many young specimens, we never had the opportunity of seeing an entirely white one. Some of the younger specimens collected, however, have the white on the throat extended very far down the fore-neck, and not seldom a part of one wing is left white while the corresponding part of the other has already changed its color. All the younger specimens collected by us have the general color ashy-gray with a bluish hue, which changes into slaty gray in adult birds.

Iris sulphureous, bill brown, base of lower mandible whitish, feet dark brown, toes and connected part of tarsi sometimes yellow.

Ardea atricapilla.

Ardea atricapilla, Afz. Acta Stockh. 1804; — Hartl. Orn. W. Afr. p. 223; — Schl. Mus. P.-B., Ardeae, p. 42; — F. & Hartl. Vög. O. Afr. p. 701.

Butorides atricapillus, Boc. Orn. d'Angola, p. 446.

Hab. The whole of Africa below the Sahara.

Collected near Grand Cape Mount.

This Heron is very common throughout the Coast-region where Mangrove-swamps and brackwater are abundant. It forms little colonies of from eight to fifteen pairs together. Their nests, formed by a few loosely joined twigs without any lining in a fork of the Mangrove, about 8 feet above the mud, are so thin that the eggs easily can be seen from below, and are almost inaccessible on account of the want of solidity in the ground. These birds are very fond of climbing up and down the Mangrove-roots and twigs, and feed generally upon different kinds of crabs and molluscs which are left by the retreating tide, and especially upon

a very peculiar small fish, the »big-eye-bompy» (*Periophthalmus koelreuteri*).

In October the female lays generally two, more rarely three eggs of a uniform green color and a size of 3,5 cm. in length and 2,8 in width. The young birds are very strongly tinged with fulvous.

Iris of adult birds yellow, of young birds brown; bill black, base of lower mandible and naked space before the eye greenish-yellow, feet brown, hind part of the tarsi and soles of the toes ochraceous.

Botaurus Sturmii.

Ardea Sturmii, Wagl. Syst. Av. Ard. sp. 37; — Hartl. Orn. W. Afr. p. 224; — Schl. Mus. P.-B., Ardeae, p. 45.

Botaurus Sturmi, Boc. Orn. d'Ang. p. 447.

Hab. Tropical and Southern Africa.

Collected at Bendo, near the Fisherman Lake.

This species was only found along freshwater-pools and creeks in the high forest. It is a very quiet bird, that seems to be somewhat rare in the country.

Iris greenish yellow, bill lemon-yellow, point black, feet reddish brown.

Botaurus leucolophus.

Tigrisoma leucolophum, Jard. Ann. and Mag. Nat. Hist. XVII, p. 51; — Hartl. Orn. W. Afr. p. 225; — Boc. Orn. d'Ang. p. 448.

Ardea leucolopha, Schl. Mus. P.-B., Ardeae, p. 50.

Hab. West Africa, from Liberia to the Congo.

Collected at Buluma, near the Fisherman Lake.

A beautiful immature male (full-grown) was shot near a freshwater-creek amidst the high forest. These birds make sometimes, especially at night, more rarely during the daytime, a tremendous noise, almost like our Bittern. The natives told me that it was produced by a gigantic

snake that had inhabited the swamp already for many years! I remember to have heard the same tones on our hunting-station near Soforé Place, where I was informed that it was produced by »a huge old Alligator, calling for meat”. As we never found Alligators in the St. Paul’s as far up as Soforé Place, there is no doubt that this loud noise had the same origin as that near Buluma. It is very peculiar that the Boers of the Transvaal also believe the cry of the Bittern to be produced by a snake (see Sharpe, Layard’s Birds of South Africa, p. 722 and 723).

The general color of our specimen, except on the crest, back, quills and tail-feathers is fulvous, broadly barred on the head, neck, scapulars and wing-coverts, with greenish black, which latter color prevails on forehead, hind neck and interscapulary feathers. The crest is as long as in adult specimens and, except a small brownish tip to some of the tolerably straight feathers, pure white. The quills are black, the primaries with a bluish, the secondaries with a greenish gloss, and all tipped with white. The first and second primary have, moreover, two large, the third and fourth only one small spot each on the inner web towards the tip, the tertiaries black, outer web banded across with fulvous. The back and upper tail-coverts are black, the first narrowly, the latter more broadly tipped with fulvous.

The tail-feathers are black, glossed with green and tipped and banded across with white. Chest, abdomen and under tail-coverts ochraceous with broad white shaft-streaks. Under wing-coverts black at base, white and faintly varied with fulvous towards the ends.

Iris sulphureous, bill greenish brown, paler towards the base, lower mandible and bare space round the eye yellowish, feet yellowish brown.

Nycticorax leuconotus.

Ardea leuconotus, Wagl. Syst. Av. sp. 33; — F. & Hartl. Vög. O. Afr, p. 713.

Notes from the Leyden Museum, Vol. VII.

Ardea cucullata (Licht.), Schl. Mus. P.-B., Ardeae, p. 60.

Nycticorax cucullatus, Hartl. Orn. W. Afr. p. 225.

Nycticorax leuconotus, Boc. Orn. d'Ang. p. 450.

Hab. Tropical and Southern Africa.

Collected at Buluma, near the Fisherman Lake.

We found, though very rarely, this bird in the same places as *A. gularis* and *A. alba*, sitting on Mangrove-bushes.

Iris orange-red; bill black, feet lemon-yellow, claws horny.

Ciconia episcopus.

Ciconia episcopus, Bodd. Tabl. 906; — F. & Hartl. Vög. O. Afr. p. 722; — Boc. Orn. d'Ang. p. 452.

Ciconia leucocephala (Gm.), Hartl. Orn. W. Afr. p. 227; — Schl. Mus. P.-B., Ciconiae, p. 9.

Hab. Tropical and Southern Africa, with the exception of the Cape Colony; Southern Asia and Indo-Malay Archipelago.

Collected near Buluma.

The White-headed Stork seems to occur but sparingly throughout the country, as we saw it only now and then along the Fisherman Lake, wading in the shallow water along the shore, in pursuit of frogs, small fishes and crabs.

Iris cherry-red; bill red, black at base; feet grayish brown.

Ibis hagedash.

Tantalus hagedash, Lath. Ind. Orn. II. sp. 708, p. 23 (1790).

Ibis Hagedash (Vieill.), Schl. Mus. P.-B., Ibis, p. 10; — F. & Hartl. Vög. O. Afr. p. 735.

Geronticus hagedash, Hartl. Orn. W. Afr. p. 231; — Boc. Orn. d'Ang. p. 460.

Hab. Tropical and Southern Africa.

Collected near Buluma, which is the only place we met with it. The only specimen obtained was shot out of six

on a grassy plain, interspersed with some shallow pools.

Iris crimson, bill and bare skin of the face black, base of culmen crimson, feet blackish red.

Ibis olivacea.

Ibis olivaceus, Du Bus, Bull. Acad. Brux. 1837, p. 103.

Comatibis olivaceus, Hartl. Orn. W. Afr. p. 231.

Ibis olivacea, Rehw. J. f. O. 1874, p. 378.

Hab. West Africa, from Liberia to the Cameroons.

Collected at Bavia and Soforé Place, St. Paul's River.

Like the above mentioned species, this Ibis lives in small families together. They had a regular sleeping-place in very high trees about half a mile above our hunting station at Bavia, on the banks of the St. Paul's. Every evening, shortly after sunset, they came past our station from down the river, making a most horrible noise, consisting of long, training notes, something like »wah-wah, wah-wah.»

Iris grayish brown, bill coral-red, bare skin of the face blackish blue, feet greenish flesh-color.

Numenius phaeopus.

Numenius phaeopus (L.), Hartl. Orn. W. Afr. p. 232; — Schl. Mus. P.-B., Scolopaces, p. 93.

Numenius hacsitatus, Hartl. Orn. W. Afr. p. 233.

Hab. The most parts of the old world; whole of Africa.

Collected near the Fisherman Lake and the Marfa River.

Very common throughout the year on the banks of rivers and lakes, especially near the mouths of rivers, where large sand-banks are regularly formed. There is no difference at all between the summer- and winter-plumage.

Iris black, bill brown, lower mandible whitish at the base, feet lead-color.

Totanus canescens.

Scolopax canescens, Gm. Syst. Nat. I. p. 668.

Totanus glottis, Hartl. Orn. W. Afr. p. 235; — Schl. Mus. P.-B., Scolopaces, p. 61.

Totanus canescens, F. & Hartl. Vög. O. Afr. p. 745; — Boc. Orn. d'Ang. p. 464.

Hab. Most parts of the world; the whole of Africa.

Collected throughout the year (January, July, October and December) along the Fisherman Lake and the Marfa River. One of the commonest of Scolopacine birds in Liberia, and generally met with in pairs together.

Iris black, bill brown, feet grayish green.

Actitis hypoleucos.

Actitis hypoleucos (L.), Hartl. Orn. W. Afr. p. 235; — Schl. Mus. P.-B., Scolopaces, p. 80; — Boc. Orn. d'Ang. p. 468.

Hab. The same as in the preceding species.

Collected near Grand Cape Mount.

Observed throughout the whole year in the same places as the former species.

Tringa subarquata.

Tringa subarquata (Güldenst.), Hartl. Orn. W. Afr. p. 237; — Schl. Mus. P.-B., Scolopaces, p. 31; — Boc. Orn. d'Ang. p. 472.

Hab. Most parts of the world; the whole of Africa.

Collected at Grand Cape Mount.

Although there were no specimens observed during the summer months — the first one was obtained as early as the 30th of September — I feel sure that this species will be found there during the whole summer. The specimen mentioned quite agrees with the dress of the young

bird, as it is described by Finsch and Hartlaub (Vög. Ost-Afrikas, p. 763). It visits the same places as the above mentioned species, especially the banks of rivers and brackwater-lagunes.

Iris blackish brown, bill and feet blackish gray.

Himantornis haematopus.

Himantornis haematopus (Temm. in Mus. Lugd.), Hartl. Journ. f. Orn. 1855, p. 357; id. Orn. W. Afr. p. 242; — Schl. Handleid. Dierk. Vog. pl. 7, fig. 88; id. Mus. P.-B., Ralli, p. 28.

Hab. Liberia and Gold Coast.

Only one specimen collected at Bavia, St. Paul's River.

This specimen was caught in a snare, in a bush-path, not far from a swamp, and so I cannot tell anything about its habits. It is a beautiful adult male. The stomach was empty.

Iris brick-red; tip of bill horn-blue, with a tinge of rose-color; ridge of bill black, base of the lower and a spot on each side at the base of the upper mandible grass-green, naked skin between bill and eye bluish black, feet coral-red.

Ortygometra nigra.

Rallus niger, Gm. Syst. Nat. I. p. 717.

Limnocorax flavirostris (Swains.), Hartl. Orn. W. Afr. p. 244.

Porzana nigra, Schl. Mus. P.-B., Ralli, p. 34.

Ortygometra nigra, F. & Hartl. Vög. O. Afr. p. 779.

Limnocorax niger, Boc. Orn. d'Ang. p. 481; — Sharpe, Layard's Birds S. Afr. p. 618.

Hab. Tropical and Southern Africa.

Collected near Robertsport.

When staying at Robertsport, I had a fine opportunity to observe the habits of this peculiar Crane, in a freshwater-swamp at the foot of the mountain, directly

behind the sea-shore. Already in September I heard every night a noise almost like that of our Corn-Crake. My boys informed me that it was made by the »black Water-hen” in the above mentioned swamp, about a mile from my station. As this swamp was, on account of the rains, almost inaccessible, all my pains were in vain until the 22nd, when I happened to shoot my first adult specimen, after the water had fallen a little. These birds were always found in pairs, of which three were believed to live in this swamp. They were very shy and would scarcely allow themselves to be seen till after we had remained a good while motionless in a well-hidden spot. I never found them swimming, although in some places the water was very deep, but they always walked with a most graceful step and nodding head on the mud and, as much as possible, beside and through the high grass. They are not easily put up and fly very low above the water for a short distance. After having fallen in again, they run very fast to hide themselves in thickets of brushwood or inaccessible grassy islets. Towards the end of October the nocturnal sounds were heard no more and I supposed the birds would be breeding, but notwithstanding all the efforts I made with my boys we were not able to find a nest. On the 15th of November one of my boys brought in three live young ones, apparently just hatched. These birds could run tolerably fast already, and were entirely covered with black down.

Adult: Iris and eyebrows crimson, bill yellowish grass-green, feet coral-red.

Young: Iris brown; bill flesh-color, with a black cross-band before the nostrils, becoming broader on the lower mandible; feet brown.

Phoenicopterus spec.?

We have never met with Flamingos, but a friend of mine, Bishop Penick, an American Missionary at Roberts-

port whom I am obliged for many interesting objects of Natural History, has shot a straggling specimen near the Cape Mount River short before our arrival at Robertsport. This specimen was the only one that people recollected to have seen in that country. As Bishop Penick failed to preserve the specimen, I cannot say to which species it belonged.

Plectropterus gambensis.

Plectropterus gambensis (L.), Hartl. Orn. W. Afr. p. 246; — Schl. Mus. P.-B., Anseres, p. 93; — F. & Hartl. Vög. O. Afr. p. 802; — Boc. Orn. d'Ang. p. 491.

Hab. Western, Southern and Eastern Africa.

Collected near the Fisherman Lake (Buluma) and on the Marfa River.

I have never had the opportunity to observe the manners of this bird in the wild state. A nearly adult female was shot by Sala near Buluma during my absence. It has the head above and the neck grayish brown, a narrow ill-defined collar round the crop, at the base of the neck, the sides of the chest, axillaries, back and upper tail-coverts brown with a purplish gloss, primaries and secondaries black with a purplish gloss, tertiaries, larger wing-coverts and tail-feathers above beautiful steel-green, with a purplish gloss under a certain light. The head underneath and sides of head anterior to the ear-coverts, the throat, chest, breast, abdomen, sides of rump, under tail-coverts, under wing-coverts, lesser wing-coverts above and foremost feathers of the larger wing-coverts pure white.

Iris blue (Sala), bill at the point bluish white, membranous part and bare skin in front of the head purplish, only the front until above the eyes being naked, legs and feet red.

About the middle of November of the same year (1881) my boys brought in alive nine specimens out of a brood

of eleven, caught in the Marfa River, about five miles off its mouth. As I was unable at that time to make any excursions, I could not try to get the parents of this brood, that was about three weeks old. Their heads were entirely covered with gray feathers, also the hind neck. Crown, chest, sides of the rump, outside of tibiae, axillaries, lower back and tail-feathers dark brown, edged with fulvous, the back, for a great part covered with down, ashy gray, tinged with fulvous, throat, sides of head and neck, lower breast, abdomen, vent and under tail-feathers silvery gray.

Iris gray; bill flesh-color, with the ridge brown; feet gray.

Sarcidiornis melanotos.

Anas melanotos, Penn. Zool. Ind. p. 21, pl. 11.

Sarcidiornis africana, Eyton, Monogr. Anat. p. 103; — Hartl. Orn. W. Afr. p. 246; — Boc. Orn. d'Ang. p. 496.

Anas melanota, Schl. Mus. P.-B., Anseres, p. 74.

Sarcidiornis melanotus, F. & Hartl. Vög. O. Afr. p. 799.

Hab. Indian Continent, Ceylon, Madagascar, Western and Eastern Africa.

This species was many times observed in two to five specimens together on the sand-banks before the mouth of the Sugary River, but we were never fortunate enough to approach within gun-shot.

When observed, they have a half erect, ungraceful attitude.

Dendrocygna viduata.

Dendrocygna viduata (L.), Hartl. Orn. W. Afr. p. 247; — Schl. Mus. P.-B., Anseres, p. 90; — Boc. Orn. d'Ang. p. 499.

Hab. Tropical parts of Africa and of America.

Collected near Robertsport.

All my specimens were collected on the sand-banks and islands before the mouths of the Grand Cape Mount-

Marfa- and Sugary River. They are always found either in pairs or in small flocks of three or four pairs together, along the waterside, where the retreating tide has left behind masses of small Crustacea and Molluses, upon which they principally feed. They are exceedingly watchful and generally fly off long before the huntsman has crept close enough to fire on them, so that to shoot this Duck always costs a large amount of time and patience. Although I had much opportunity of observing these Ducks, I never found them sitting on trees or even the Mangrove-clumps along the rivers. On the 9th of September 1881 I received an adult living specimen from a Native, who had caught it, as he said, on a nest with seven eggs, which latter unfortunately were eaten up by the man. Strange enough, this specimen, when dissected, proved to be a male! A few days afterwards I was brought to the nest, forming a kind of cup in dry grass under some shrubs, close to the mouth of the Grand Cape Mount River.

Seven young, covered with down, about a week old, were caught together in a grassy plain near the sea-coast, by my boys, the 16th of August. Iris brown, bill bluish, feet lead-color.

Adult: Iris dark grayish brown, bill black, with a bluish white cross-band behind the point, feet lead-color.

Sterna cantiaca.

Sterna cantiaca (Gm.), Hartl. Orn. W. Afr. p. 255; — Schl. Mus. P.-B., Sternae, p. 5; — Boc. Orn. d'Ang. p. 512.

Hab. Europe and the West Coast of Africa, till down to the Cape of Good Hope.

Collected on the beach near Robertsport.

One specimen shot from two, which I saw flying above the surf near Robertsport, on the 3rd of December.

Iris dark brown; bill black, with yellowish horn-colored tip; feet black.

Sterna fluviatilis.

Sterna fluviatilis (Naum.), Dresser, Birds of Europe, VIII. pl. 45.

Sterna senegalensis (Sw.), Hartl. Orn. W. Afr. p. 255.

Sterna hirundo, Schl. Mus. P.-B., Sternae, p. 17.

Sterna macroptera (Blas.), Boc. Orn. d'Ang. p. 510.

Hab. Europe, whole of Africa.

Collected, near Robertsport, Grand Cape Mount.

An adult male in full breeding-plumage was shot on the 26th of July, and four other ones, probably younger birds, on the 26th of April, the 26th of July, the 13th and 15th of August. During the whole summer large flocks of this Tern were seen near the bar-mouth, i. e. the united mouths of the Grand Cape Mount-, the Marfa- and the Sugary River. The younger specimens mentioned are white underneath and on the front. Upper tail-coverts gray like the back, lesser wing-coverts black, forming a black band along the edge of the wing. Iris brown, bill black, red near the base, feet red.

Iris of the adult bird brown, bill coral-red, with black point, utmost tip of both adult and young horny white, feet coral-red.

Hydrochelidon nigra.

Sterna nigra, Briss. Orn. VI. p. 211, pl. 20, fig. 1.

Hydrochelidon nigra, Hartl. Orn. W. Afr., p. 256; — Boc. Orn. d'Ang. p. 513.

Sterna fessipes et *nigra*, Schl. Mus. P.-B., Sternae, p. 29.

Hab. Europe; West Africa till down to the Cape of Good Hope.

Collected near Robertsport (Grand Cape Mount).

On the 15th of August I shot about 20 specimens out of a large flock, near the already mentioned bar-mouth. As they were all younger birds and wore a quite similar plumage — I do not remember to have seen birds in full

breeding plumage amongst the flock — I skinned but five specimens which are now all before me. The whole flock was sitting on a sand-bank at low water, rising like a cloud into the air after my first shot with great noise, and pouncing down upon their wounded comrades so that I was enabled to discharge shot after shot from my dancing canoe.

Iris dark brown, bill black, feet sooty brown.

Rhynchops flavirostris.

Rhynchops flavirostris, Vieill. Nouv. Dict. III. p. 358; — Schl. Mus. P.-B., Sternae, p. 40; — Boc. Orn. d'Ang. p. 515.

Rhynchops orientalis, Rüpp. Hartl. Orn. W. Afr. p. 257.
Hab. Western and Eastern Africa.

Collected near Robertsport.

I have seen the Scissor-bills during the summer of 1881 at the same places as the above mentioned Terns, but never higher up in the Interior. They were always found in pairs, which are easily killed, as one, as soon as the other has fallen by a shot and is left for a moment on the ground, flies round its fallen comrade until it is killed by another shot. A pair of adult birds in breeding plumage was shot on the 17th of August, another, semi-adult pair on the 26th of September. The bills of the latter were not yet fully developed, though exactly of the same shape as in the adult birds; they are coral-red with blackish tips. The upper parts are sooty brown as in the adult, but most of the feathers slightly tipped with whitish; underneath white, front and sides of head strongly tinged with brown. Iris black, feet coral-red.

Iris of adult birds dark brown, bill coral-red, point orange-yellow, feet coral-red.

Plotus Levaillantii.

Plotus Levaillantii, Licht. Cat. Doubl. Mus. Berol. p.

Notes from the Leyden Museum, Vol. VII.

87; — Hartl. Orn. W. Afr. p. 258; — Schl. Mus. P.-B., Pelecani, p. 25; — Boc. Orn. d'Ang. p. 519.

Hab. Tropical and Southern Africa.

Collected on the Marfa River.

This species is found during the whole year perching on trees along rivers and creeks in the Grand Cape Mount Country, but not so common by far as the African Cormorant, which inhabits the same localities. They are found fishing near the water, sitting, if possible, on a projecting rock or an overhanging tree just above the surface of the water, with S-like drawn up neck. When wounded, they try to escape by diving and defend themselves, when harassed, by violent blows with their sharp-pointed bill.

Iris reddish brown, bill grayish green, feet red, strongly tinged with brown.

Graculus africanus.

Pelecanus africanus, Gm. Syst. Nat. I. p. 177.

Phalacrocorax africanus, Hartl. Orn. W. Afr. p. 259.

Graculus africanus, Schl. Mus. P.-B., Pelecani, p. 15;
— Boc. Orn. d'Ang. p. 522.

Hab. Tropical and Southern Africa.

Collected during January and February near the Fisherman Lake.

Tolerably common along rivers and creeks, generally perching on not very high trees. Its habits and food (fishes) the same as in the preceding species.

Iris orange-red; bill yellowish flesh-color, with blackish point; feet black.

Leyden Museum, February 1835.

RECAPITULATION.

<i>Strigidae.</i>	Page	<i>Meropidae.</i>	Page
1. <i>Syrnium nuchale</i> , Sharpe.	151.	25. <i>Merops albicollis</i> , Vieill.	166.
		26. " <i>erythropterus</i> , Gm.	167.
		27. " <i>gularis</i> , Shaw	"
		<i>Nectariniidae.</i>	
		28. <i>Cinnyris verticalis</i> (Lath.)	168.
2. <i>Circus macrourus</i> , Gm.	"	29. " <i>fuliginosa</i> (Shaw)	"
3. <i>Spizaetus bellicosus</i> (Daud.)	152.	30. " <i>chloropygia</i> (Jard.)	169.
4. <i>Astur monogrammicus</i> (Temm.)	"	31. " <i>venusta</i> (Shaw)	"
5. <i>Nisus hartlaubii</i> , Verr.	153	32. <i>Anthreptes hypodilus</i> (Jard.)	170.
6. " <i>macrocelides</i> (Hartl.)	"		
7. <i>Haliaetus angolensis</i> (Gm.)	154.		
8. <i>Milvus aegyptius</i> (Gm.)	155.		
9. <i>Baza cuculooides</i> (Sw.)	"		
		<i>Lusciniaidae.</i>	
		33. <i>Prinia mystacea</i> , Rüpp.	171.
		34. <i>Cisticola lateralis</i> (Fras.)	"
		35. " <i>ruia</i> (Fras.)	172.
		36. <i>Acrocephalus turdoides</i> (Meyer)	"
		37. <i>Camaroptera brevicaudata</i> (Cretzschm.)	173.
		38. <i>Motacilla vidua</i> , Sundev.	"
		39. " <i>flava</i> , L.	174.
		40. <i>Anthus pyrrhonotus</i> , Vieill.	"
		41. <i>Macronyx croceus</i> (Vieill.)	"
		<i>Turdidae.</i>	
		42. <i>Pitta angolensis</i> , Vieill.	175.
		43. <i>Turdus pelios</i> , Bonap.	176.
		44. <i>Cossypha poensis</i> , Strickl.	"
		45. " <i>verticalis</i> , Hartl.	177.
		46. <i>Alethe poliocephala</i> (Temm.)	"
		47. <i>Crateropus atripennis</i> , Sw.	178.
		48. <i>Turdinus gularis</i> , Sharpe	"
		49. <i>Criniger barbatus</i> (Temm.)	"
		50. " <i>canicapillus</i> (Hartl.)	"
		51. " <i>leucopleurus</i> (Cass.)	179.
		52. " <i>eximius</i> (Hartl.)	"
		53. <i>Xenocichla syndactyla</i> (Sw.)	"
		54. <i>Andropadus latirostris</i> , Strickl.	180.

	Page		Page
118. <i>Coccyzus cafer</i> , Licht.	225	141. <i>Botaurus Sturmii</i> (Wagl.)	240.
119. <i>Chrysococcyx cupreus</i> (Bodd.)	"	142. " <i>leucolophus</i> (Jard.)	"
<i>Columbidae.</i>			
120. <i>Treron calva</i> (Temm.)	226.	143. <i>Nycticorax leuconotus</i> (Wagl.)	241.
121. <i>Columba unicincta</i> , Cass.	"	144. <i>Ciconia episcopus</i> , Bodd.	242.
122. " <i>iriditorques</i> , Cass.	227.	145. <i>Ibis hagedash</i> (Lath.)	"
123. <i>Turtur semitorquatus</i> (Rüpp.)	"	146. " <i>olivacea</i> , Du Bus	243.
124. <i>Peristera puella</i> , Schl.	228	<i>Scolopacidae.</i>	
125. " <i>afra</i> (L.)	229.	147. <i>Numenius phaeopus</i> (L.)	"
126. " <i>tympanistria</i> (Temm.)	"	148. <i>Totanus canescens</i> (Gm.)	244.
<i>Numididae.</i>			
127. <i>Numida cristata</i> , Pall.	230.	149. <i>Actitis hypoleucos</i> (L.)	"
128. <i>Agelastes meleagrides</i> , Temm.	"	150. <i>Tringa subarquata</i> (Güld.)	"
<i>Tetraonidae.</i>			
129. <i>Francolinus achantensis</i> , Temm.	231.	<i>Rallidae.</i>	
130. " <i>lathamii</i> , Hartl.	"	151. <i>Himantornis haematopus</i> , Temm.	245.
<i>Charadriidae.</i>			
131. <i>Oedinenus vermiculatus</i> , Cab.	232.	152. <i>Ortygometra nigra</i> (Gm.)	"
132. <i>Glareola megapoda</i> , Gray	233.	<i>Anatidae.</i>	
133. <i>Vanellus inornatus</i> , Sw.	235.	153. <i>Phoenicopterus spec.?</i>	246.
134. <i>Lobivanellus albiceps</i> (Gould)	236.	154. <i>Plectropterus gambensis</i> (L.)	247.
135. <i>Charadrius hiaticula</i> , L.	237.	155. <i>Sarcidiornis melanotos</i> (Penn.)	248.
136. " <i>cantianus</i> , Lath.	"	156. <i>Dendrocygna viduata</i> (L.)	"
<i>Ardeidae.</i>			
137. <i>Ardea ardesiaca</i> , Wagl.	238.	<i>Laridae.</i>	
138. " <i>alba</i> , L.	"	157. <i>Sterna cantiaea</i> , Gm.	249.
139. " <i>gularis</i> , Bosc	"	158. " <i>fluviatilis</i> , Naum.	250.
140. " <i>atricapilla</i> , Atz.	239.	159. <i>Hydrochelidon nigra</i> (Briss.)	"
		160. <i>Rhynchops flavirostris</i> , Vieill.	251.
<i>Pelecanidae.</i>			
		161. <i>Plotus Levillantii</i> , Licht.	"
		162. <i>Graculus africanus</i> (Gm.)	252.

NOTE XX.

A SUPPLEMENTARY NOTE ON GLAREOLA
MEGAPODA.

BY

J. BÜTTIKOFER.

Just after the preceding Note had left the press, I got a letter from Dr. H. Guillemard, at Cambridge, about the type of *Glareola megapoda* in the British Museum. During his visit to the Leyden Museum some weeks ago, I called his attention to my Liberian Pratincoles, the specific rank of which was still doubtful in a certain degree. Dr. Guillemard now was kind enough to examine the type in the British Museum and to send me the following informations:

»The occipital band is of the same size and rusty red colour as in your birds. You gave me the following as the measurements of your *Glareola*:

Wing 13,7—14,4 cm.; tarsus 1,8; bill 1,0.

Those of the British Museum bird are:

Wing 14,9 cm.; tarsus 2,0; bill 1,0.”

As Mr. Sharpe, who also examined the type of *G. megapoda* for me (see p. 233), did not mention its size nor the color of its occipital band, I thought it not without interest to publish the above informations of Dr. Guillemard.

Leyden Museum, June 1885.

NOTE XXI.

A NEW SPECIES OF THE COLEOPTEROUS GENUS
TRITOMIDEA, MOTSCH.

DESCRIBED BY

the Rev. H. S. GORHAM.

Tritomidea is the Eastern and Tropical representative of the Palæarctic genus *Tritoma*¹⁾ from which it is distinguished by the form of the maxillary palpi which have the apical joint dilated as in some *Triplax*. The antennae have the terminal joint of the club smaller than that preceding it. *Spondotriplax* Crotch, to which the insect here described has also some affinity, has the terminal joint larger, and the club is longer, and the third joint of the antennae is longer. *Euxestus* Woll. is the Atlantic type.

Tritomidea atripennis, sp. n.

Ovata, lacte fulva, fere glabra, antennarum clava clytrisque nigris, his corruleo micantibus, striatopunctatis, interstitiis leviter minute punctatis. — Long. 4—4³/₄ millim.

1) *Cyrtotriplax* Crotch (Ent. Mo. Mag. IX. p. 189. — Trans. Am. Ent. Soc. 1873. p. 355) is a mere substitution for *Tritoma* Fabr., of which the type is *T. bipustulata* F., on the ground of its not being the *Tritoma* of Geoffroy. — Geoffroy, as is well known, does not employ specific names, but his figure (tab. VI, fig. 2) evidently represents the insect known as *Mycetophagus quadripustulatus*, but he figured the tarsi with three joints, instead of, as they are, with four; and states that it was (as he supposed) on this account that the French applied the name „La Tritome” to the insect! Geoffroy was as likely to be wrong about the application of a popular term as he was about the [number of joints in the tarsi, and until naturalists adopt *Tritoma* for the *Mycetophagus*, the change of name fails in justification. — *Tritoma* was used in Botany by Ker subsequently, in 1801.

Hab. Sumatra: Loeboe Tarab and Silago (Sum. Exp.).

Entirely bright ferruginous-red with the exception of the club of the antennae and the elytra, which are bluish-black. The head and thorax are minutely but distinctly punctured. The front angles of the thorax are neither very prominent nor much depressed, it is very smooth and glabrous, the minute punctures being only distinct under a $\frac{1}{4}$ inch focus. The elytra are distinctly but finely striate-punctate, there being about eight of the series on each elytron; that nearest the margin is shortened towards the shoulder, nearly all continue to near the apex where they unite, but the central ones vanish. — Two specimens.

Var.? *Scutello nigro, elytris nigris haud corrulescentibus.*

Hab. Sumatra: Mesauw (Sum. Exp.).

This, I think, may be a distinct species, but there is only one specimen.

Southampton, 30th April 1885.

NOTE XXII.

ON DEFORMITIES OF THE HEAD IN SALMONIDAE.

BY

Dr. Th. W. van LIDTH de JEUDE.

(Plate 7).

In the »Verhandlungen der k. k. zoologisch-botanischen Gesellschaft in Wien» (Jahrg. 1863) Dr. Steindachner describes 3 monstrous heads of carps, presented to the Museum of Vienna, and suggests that these monstrosities could not be the results of some former wound, but that the deformity was caused by the pathological state of some part of the skull.

In Isid. Geoffroy St. Hilaire's interesting researches on teratology¹⁾ we see on plate 1 (fig. 4, 5 and 6) three drawings of carp-heads, that bear a great resemblance to the figures of Dr. Steindachner's. According to the author these anomalies are not very rare in France, at those places where carps are cultivated in ponds; and Otto²⁾ also states the appearance of such monstrosities in Silesia.

In other fishes these deformities seem to be much rarer.

In Vrolik's Atlas³⁾ a pike is figured having the face and the upper-jaw but slightly developed, and consequently the under-jaw very prominent.

A similar drawing is to be found in Otto's Atlas of

1) Is. Geoffroy St. Hilaire, *Histoire générale et particulière des anomalies de l'organisation chez l'homme et les animaux*. Paris, 1832.

2) Otto, *Lehrbuch der pathologischen Anatomie*.

3) *Tabulae ad illustrandum embryogenesisin hominis et mammalium tam naturalem quam abnormam*, auctore W. Vrolik. Amstelodami, 1849. Tab. 61, fig. 6.

monstrosities ¹⁾. Sandifort ²⁾ mentions a monstrous salmon-head, but neither figures nor describes it.

The latest researches of Dareste and Gerlach have more and more fixed the attention on teratological forms, and therefore I hope it will not be without interest, when I give here the description and the figures of 2 monstrous Salmonidæ, that were presented to the Leyden Museum.

The first is a specimen of the salmon-trout (*Salmo trutta*) captured in our rivers in the month of October 1884. It is an unripe male of 25 cm. length, in a very wholesome condition, but with a deformity of the head, which is figured on pl. 7, fig. 1.

The prenasal portion of the head is but slightly developed and therefore the normal under-jaw projects in front of the snout. The premaxillaria are small, and asymmetrically developed, the right one being the largest and bearing 4 teeth, the left one smaller with only 3 teeth. These premaxillaria are not directed forwards, but curved, and each growing towards its fellow; therefore the head gets a short and broad appearance. The two bones do not meet at the midline but are connected by a cartilagenous strip. This strip is 4 m.m. broad, and shows at the underside a rounded emargination, giving to the snout some resemblance with a hare-lip. The supra-maxillaria are a little shorter than in the normal state, slightly curved and bearing small teeth, which are directed inwards.

The second monstrosity is a specimen of *Salmo salar*, and was presented to the Leyden Museum by Messrs. ten Houten & de Raadt at Kralingsche Veer. The head is figured on pl. 7, fig. 2 and shows no shortening, but a curvature of the prenasal portion.

I suppose this deformity is caused by the slight development of vomer, parasphenoid and palatines. Because

1) Museum anatomico-pathologicum Vratislaviense. Vratislaviae, 1841. Tab. 3, fig. 5.

2) Sandifort, Museum anatomicum.

of the articulation that exists in *Salmo* between the supra-maxillaries and the palatines, the slight development of vomer, parasphenoid and palatines has hindered the supra-maxillaries in their growth and prevented them getting their normal length. The left supra-maxillary is the smaller and bears a few but very small teeth, the right one is somewhat larger and bears teeth, which are much more developed.

Ethmoideum and nasalia have not ceased growing at so early a period, and on account of the slight development of the base of the skull in this region, the prenasal portion of the head got crooked.

Therefore the upper surface of the snout got bent, first in a downward and then in a backward direction. The praemaxillaria, fully developed but directed backwards, are consequently lying under the palate.

The teeth of the praemaxillaria are fullgrown, but have their points directed upwards and forwards, due to the abnormal position of these bones.

This salmon was a ripe male, weighing 2,7 kg. and showing no extraordinary meagerness. Stomach and intestines were quite empty, as generally is the case with salmon caught in our rivers.

Leyden Museum, May 1885.

NOTE XXIII.

DESCRIPTION D'UNE ESPÈCE NOUVELLE EXOTIQUE
DU GENRE NECROPHORUS, FABR.

PAR

ANT. GROUVELLE.*Necrophorus distinctus*, n. sp.

Noir avec deux bandes rouges transversales sur les élytres et une tache subhumérale de même couleur. Massue des antennes rouge sauf le premier article et l'attache des deuxièmes et troisièmes. Prothorax glabre, presque orbiculaire, largement explané à la base et sur les côtés; impressions longitudinales et transversales profondes, bien marquées. Elytres légèrement élargies vers le sommet, glabres, à ponctuation assez forte, médiocrement serrée; bandes rouges interrompues à la suture, la 1^{ère} atteignant le rebord latéral et se réunissant presque à la deuxième par l'épipleure qui est en majeure partie rouge; deuxième bande séparée du rebord latéral par une très-étroite bordure noire. Poitrine couverte d'une pubescence fauve assez dense, segments de l'abdomen à pubescence brune peu serrée; dernier segment frangé au sommet de poils fauves. Pubescence des pattes d'un brun flave, peu serrée, sauf dans une petite impression rugueuse située en dedans des cuisses postérieures vers leur sommet.

Les jambes postérieures du mâle sont très-fortement arquées, elles sont déprimées et s'élargissent brusquement vers le milieu de leur longueur. Trochanters émoussés. — Long. 25 mill.

Deux exemplaires provenant des Célèbes (Forsten et Riedel). — Musée de Leyde.

NOTE XXIV.

A NEW ENTOZOON
FROM STRUTHIO MOLYBDOPHANES, RCHW.

DESCRIBED BY

Dr. R. HORST.*Sclerostoma Struthionis*, n. sp.

(Plate 8).

Examining the intestinal tract of a female of *Struthio molybdophanes* Rchw., died in the Zoological garden at Rotterdam, I found in both the coeca a large number of Nematoids, which I believe to represent a new species, belonging to the genus *Sclerostoma* Rud. The parasite is characterized as follows:

Body cylindrical, transversely striated, slightly narrowed in front, attenuated gradually towards the posterior extremity, with two narrow lateral-membranes. Anterior part of the head surrounded by an annular wall. Buccal capsule with a single row of stiff cilia, surrounding the mouth and a longitudinal furrow along the middle of the dorsal side. The sub-median oral papillae are conical, the lateral ones spade-shaped. Two small, pointed neck-papillae about the middle of the oesophagus. The caudal extremity of the male bent backwards and furnished with a trilobed bursa, consisting of two broad, rather polygonal, lateral lobes and a narrower, pear-shaped dorsal one. Each posterior ray bears at its base two short secondary branches, of which the external is somewhat longer than the internal.

Notes from the Leyden Museum, Vol. VII.

The posterior lateral ray (costa posterior externa Schneid. ¹⁾) is rather slender and originates beneath the base of the common stem of the posterior rays; the middle rays are separated, the anterior being larger than the posterior. The anterior lateral ray (costa anterior externa Schneid.) is short and narrow, not much longer than the half of the middle ray; two anterior rays, of which the external is somewhat longer than the internal. Before the cloacal opening of the male there are two large and several small papillae. Two long, slightly S-like bent spicules, measuring 0,87 m.m., with their distal extremity curved knee-like. The caudal extremity of the female terminating in a conical, pointed tail; a large, papillose elevation before the vulva, situated 0,25 m.m. above the point of the tail. A bifurcated vagina, passing into two parallel uterine ducts, directed forwards and terminating each in a long ovarian coecum, with numerous coils.

Length of male 17 m.m., breadth 0,42 m.m.

Length of female 23 m.m., breadth 0,7 m.m.

The cuticula is furnished with annular grooves, surrounding the whole body and not interrupted in the lateral lines; they lie on a distance of 0,012 m.m. from each other. About $\frac{2}{3}$ of the length of the oesophagus the cuticula shows on each side in the lateral line a cup-like depression, in which is placed a small spine, resting on a papillose thickening of the hypodermis. Two similar, but much smaller spines are situated near the base of the conical tail of the female. At a short distance behind the anterior extremity of the body, on the place of insertion of the oral papillae, there is a constriction separating an annular wall from the rest of the body. The oral aperture is surrounded by a crown of numerous conical cilia, standing on a broad edge of the anterior opening of the

1) Schneider, Monographie der Nematoden, p. 130.

buccal capsule; this edge shows at the innerside a number of rod-like thickenings, corresponding exactly with the number of cilia. Along the middle of the dorsal side, nearly over the whole length of the buccal capsule, there is a cleft, bounded on each side by a list, which is a continuation of the inferior border of the capsule; this list has a faintly crenulated border and shows small irregular figures, produced, as I believe, by the presence of small beams, which are bifurcated at their inferior end and support the list. The fissure is able to be widened and is covered by a vaulted, elastic piece of chitine. According to the description of Mr. Schuithess ¹⁾ the buccal capsule of *Dochmius duodenalis* Leuck. shows a similar fissure; the irregular dark figures of the list however are supposed by him to be due to the presence of openings. We find two pear-shaped neck-glands with a long efferent duct, quite like in *D. duodenalis* Leuck. The wall of the intestine is furnished with a black pigment and shows often in its lower part singular nodular thickenings.

The reproductive organ of the male consists of the testis, the seminal vesicle, separated at its superior and inferior end by a constriction from the rest of the vas deferens, and of the ejaculatory duct. The testis, beginning with its blind extremity at a short distance beneath the inferior part of the oesophagus, lies with numerous loop-like coils, increasing in width, along the anterior part of the intestine to about $\frac{1}{3}$ of the body-length; here it makes a S-like flexure, directed forwards, and passes into the wide, thinwalled seminal pouch, measuring about 2 m.m. in length. The ejaculatory duct in its beginning nearly as broad as the seminal vesicle, is attenuating gradually towards the tail; its muscular wall consists, like in the vagina, of two layers of spirally twisted fibres. The spicules are fur-

1) Beiträge zur Anatomie von *Dochmius duodenalis* Leuck., Zeitschr. f. Wissenschaft. Zoologie, Bd. XXXVII, 1882, p. 163.

nished with two broad wings, transversely striated, attenuating towards both extremities and rolled towards each other at the ventral side, like in *Filaria attenuata* R. ¹⁾; their colour is brown, except in the inferior half of the wings. The spicules are held together by a short, tubular piece of chitine, splitted at one side like a penn-holder; it lies at a short distance above the cloacal opening.

As regards the reproductive organs of the female, they are remarkably long, exceeding the body in length several times. The ovarian tubes are frequently coiled upon themselves and around the intestinal canal; though lying with their largest part in the anterior half of the body, they are extending with a loop to a short distance from the tail, about $\frac{1}{3}$ of the body-length. The oviduct is a cylindrical tube, downwards gradually increasing in width, and densely filled up with several rows of ova; before passing into the uterus the oviduct however suddenly becomes narrowed, its diameter measuring only $\frac{1}{3}$ of the preceding part and the ova therefore can only pass through this duct in a single row. This inferior, slender part of the oviduct was indicated by Meissner with the name of *Eiweisseschlauch*, because it was supposed by him to have the function of secreting albumen; since this suggestion is rejected by different authors ²⁾, it seems to me more probable that the meaning of this duct is to assure better the impregnation of the eggs, if they are entering one by one into the uterus. For I find the upper slender part of the uterus constantly densely filled up with spermatozoa, and no doubt this is the very place of impregnation, which could be rightly indicated with Leuckart's ³⁾ name of »*poche copulatrice*»; however this part is by no means separated from the middle, broader

1) Schneider, l. c., Pl. XXII, fig. 3.

2) E. van Beneden, l'Appareil sexuel femelle de l'*Ascaride mégalocéphale*, Archives de Biologie, T. IV, p. 98.

3) v. Beneden, l. c. p. 102.

portion of the uterus, which contains eggs in every state of segmentation.

The uteri are situated parallel to each other along the intestine, exceeding a little the half of the body-length; the eggs, they contain, have a length of 0,072 m.m. With their inferior end the uterine ducts join the two corns of the bifurcated vagina, which is covered with a thick muscular sheath; certainly Schneider¹⁾ was not right in regarding this part of the oviduct as an uterus, because, as I indicated before, already a higher situated part of the oviduct contains embryos. The vagina consists of a short common duct and two longer corns, not unlike that of *Deletrocephalus dimidiatus* Dies.²⁾; each corn is separated by a constriction, nearly on the middle of its length, in an upper and under portion. Only the upper half is coated with the two characteristic layers of crossing diagonal muscles; the lower half, like the common duct, shows only longitudinal muscles, twisted somewhat spirally. The vulva lies 0,5 m.m. from the end of the tail.

As far as I know, only two species of Strongylids are hitherto known to infest Ostrichs: 1^o. *Deletrocephalus* (*Strongylus* Schn.) *dimidiatus* Dies.³⁾, characterized by its six-lobed mouth-edge, its buccal capsule with longitudinal rows of denticles and its long spicules, measuring 5 m.m., from *Rhea americana* Lath.; 2^o. *Strongylus Douglassii* Cobb.⁴⁾ with simple unarmed mouth, with short ($\frac{1}{10}$ m.m.), stout spicules, and with a small number of large-sized eggs, from *Struthio camelus* L.

1) Schneider, l. c. p. 258; Leuckart, Die menschliche Parasiten, 1876, p. 431.

2) Molin, Il sottordine degli Acrofalli, Memorie dell' I. R. Istituto Veneto, Vol. IX, 1860, p. 427, Pl. XXXII, fig. 2.

3) Diesing, Systema Helminthum, Vol. II, 1851, p. 298; idem, Denkschriften K. Akad. Wissensch. Wien, Vol. IX, 1855, p. 183, Pl. VI; Schneider, l. c., p. 136, Pl. VIII, fig. 14 and 15; Molin, l. c., p. 567.

4) Spencer Cobbold, New Entozoon from the Ostrich, Journal Linnæan Society, Zoology, Vol. XVI, 1882, p. 184, Pl. 4.

Explanation of the plate.

- Fig. 1. Anterior part of the body. $\times 36$ diam.
Fig. 2. Cephalic extremity, lateral view. $\times 65$ diam.
Fig. 3. Buccal capsule. $\times 90$ diam.
Fig. 4. Caudal extremity of the male, lateral view.
 $\times 65$ diam.
Fig. 5. Bursa of the male, surface-view. $\times 36$ diam.
Fig. 6. Caudal extremity of the female. $\times 36$ diam.
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NOTE XXV.

ON TWO RE-DISCOVERED ANTELOPES.

BY

Dr. F. A. JENTINK.

September 1885.

La manie de faire des espèces doit être bien entraînant, pour en établir même sur des lambeaux de dépouille d'un animal, qu'on doute encore que ce soit effectivement une Antilope (Temminck).

Among the Mammals collected by our travellers in Liberia are two Antelopes of a peculiar scientific interest; the one procured by Mr. Büttikofer was only known from a description and name given to a flat skin without head, neck, extremities and tail; the other, sent over by Mr. Stampfli, is the first complete representative of a species created in favour of a skull without horns belonging to an Antelope. The named piece of a skin as well as the skull are in the British Museum. As in so many other cases, if species have been described after insufficient materials, these type-specimens have a very problematical scientific value and the results of the laughing efforts to create as many species as possible in order to secure types are in the case under consideration that several naturalists have spent much time and filled many waste-paper.

In describing the named species I subscribe Ogilby's statement, that the re-discovery of an old species was at

all times more gratifying and more beneficial to the science of zoology, than the original description of twenty that were new.

Antilope (Cephalophus) doria (plate 9).

1832. *Antelope?* Bennett. P. Z. S. L. p. 122.
 1836. *Antilope doria* Ogilby. P. Z. S. L. p. 120.
 1836. *Antilope zebra* Gray. Ann. & Mag. Nat. Hist. (fide Gray).
 1836. *Antilope zebra* Robert. Echo du Monde savant.
 1843. *Cephalophorus? zebra* Gray. List of spec. of Mammalia. p. 163.
 1849. *Antilope doria* Fraser. Zoologia typica (cum figura).
 1850. *Damalis? zebra* Gray. Gleanings Menag. p. 22.
 1850. *Damalis? zebra* Gray. P. Z. S. L. p. 142.
 1852. *Damalis? zebra* Gray. Cat. of the Spec. Ungulata furcipedata. p. 129.
 1872. *Damalis? zebra* Gray. Cat. of Ruminant Mammals. p. 45.
 1873. *Damalis? zebra* Gray. Handlist of the Edent. Thick-sk. and Rum. Mamm. p. 117.
Canis or *Fiverra zebra* Whitfield Mss. (fide Gray).

Bennett has given in the Proc. Z. S. L. of the year 1832 a very exact description of a skin in the British Museum, having attached to it no portion of the neck, extremities or tail and consisting only of that of the body and Fraser figured it in his Zoologia typica. Bennett described this imperfect skin as follows: »The dorsal portion is »of a bright rufous fawn, which is continued on the shoul- »ders and on the buttocks, but from which the red nearly »disappears on the under surface, that being pale fawn. »Across the whole of the back, commencing between the »shoulders and passing backwards, a series of broad trans- »verse glossy black stripes are seen, which run down the »sides, becoming narrower towards the belly. These stri-

»pes are twelve in number and are preceded and succeeded
 »by a few similar, closer set, and fainter stripes, of a
 »deeper rufous than the ground. The broadest of the dark
 »stripes are on the loins, where they are fully an inch in
 »width; their direction in passing the sides is rather back-
 »wards. The quality of the fur is rather rigid, and the hairs
 »are adpressed, resembling in these particulars the cover-
 »ing of the Zebras". This description corresponds exactly
 with what the young male-specimen now before me shows,
 so I only have to add the peculiarities of the head, tail
 and legs. Head, ears, chest and legs bright rufous; ante-
 rior upper part of nose black; chin white. Inferior part
 of upper half of legs externally black; a broad black ring
 encircles the legs just above the hoofs; upperparts of in-
 side of legs white; upperparts of tail bright rufous, tip
 and underparts of tail pure white. The rather large and
 pointed hoofs are of a light brownish black tinge.

Some measurements of the young ♂ above described:

	mun.
Length from tip of nose to base of tail	460
" of fore-legs	165
" " hoofs	11
" " tail (with tuft)	55
" " ear	50

This young-male has no trace of horns, but happily we possess the skull of an adult-male, shot also by Mr. Büttikofer. Plate 9 will give an excellent idea of it, better than any description. It has been drawn at $\frac{1}{2}$ of its natural size. The intermaxillaries of both, upper and lower, jaws are wanting.

Hab. Liberia: Soforé-place on the St. Paul's-river (J. Büttikofer).

Although Gray several times cited *Antilope zebra* as if he had described the first the animal under consideration under that name in Ann. and Mag. of Nat. Hist. of the year 1836, I nowhere can find this description, notwithstanding I scrutinized the named volume (1836) and the foregoing volumes. So I conclude that Gray in

1836 intended to describe it and afterwards thought that he really did so. Ogilby said in 1836 »that the beautiful »species mentioned by Bennett is a real Antelope and »which he hoped shortly to have an opportunity of descri- »bing in detail under the name of *A. doria*, as a friend, »who has connections with the Westcoast of Africa, had »kindly undertaken to procure him skins”.

Now the history has learned that about half a century after the kind offerings of Ogilby’s friend the first complete specimen reached Europe in the form of the young male-specimen now in the Leyden Museum.

Gray relates that the specific name is supposed to be commemorative of Mrs. Ogilby, whose christian name was *Doria*.

Antilope (Terpone) longiceps (plate 10).

1865. *Cephalophus longiceps* Gray. P. Z. S. L. p. 204 and a woodcut of the skull.
1865. *Cephalophus longiceps* Gray. Ann. and Mag. Nat. Hist. p. 63, with a figure of the skull.
1871. *Terpone longiceps* Gray. P. Z. S. L. p. 592 (partim).
1872. *Terphone longiceps* Gray. Catal. of Ruminant Mammals. p. 24 (partim).
1873. *Terphone longiceps* Gray. Hand-list a. s. o. p. 93.

This highly interesting Antelope externally resembles a calf, its horns bring in mind *Anoa depressicornis*, the distribution of its coloring *Tapirus indicus*.

Description of the very adult female in the Leyden Museum: general color of head, neck, chin, throat, breast and anterior part of body of a dark sooty brown; posterior part of body and the legs of a grizzled tinge. The dark anterior part of the body separated from the lighter colored posterior part by a pure white and very obvious band. Lips, a circle round the naked muzzle, a patch under the chin and a ditto perpendicular under each eye in a straight line behind the

corner of the mouth white; ears like the head, with a few white hairs on the basal half of the anterior margin. The hairs of back, belly, tail and legs are sooty with pure white tips; the length of this white tip is very different and produces several degrees in the grizzled tinge, so that the color turns in a more or less pure white on the legs, except the fore-side and outside of upper half of fore-legs. Tail with a tuft. All the hairs are short, especially those of the dark colored head and anterior part of body, rather harsh, adpressed.

Horns elliptical towards the base, cylindrical towards the top, slightly curved backwards; several closely arranged annulations to a height of about 50 mm., for the rest smooth. Hoofs rather short, wearred off.

Some measurements of the adult female:

	cm.
Length from tip of nose to base of tail . . .	134
" of tail without tuft	10
" " ear.	8.5
" " horn, measured along the curvature.	17.5
Greatest circumference of horn	8.5

Measurements of the skull agree exactly with those given by Gray of the skull in the British Museum (P. Z. S. L. 1865. p. 204). As to the shape of the skull thus I refer to Gray's figure and description, except what he said concerning the horns, for his type was a skull without horn-sheaths (Hand-list of Ruminant Animals, p. 93).

Hab. Gaboon (Du Chaillu); Liberia: Schieffelinsville on the Junk-river (F. X. Stampfli).

I am convinced that Mr. du Bocage is in the right in believing that his *Cephalophus ruficrista* has nothing to do with the species under consideration (P. Z. S. L. 1878. p. 744). In the measurements of the ears, I am sure, Mr. du Bocage made an error, for no Antelope has ears of a length of 0.95 meter! This ought to be probably 0.095 meter, I think.

INDEX.

A.

- Acanthodrilus 130.
 Accipiter 153.
 Accipitres 253.
 Acrocephalus 172, 253.
 aestroacta (Cylindrotoma) 11.
 " (Eriocera) 11.
 " (Limnobia) 11.
 Actitis 244, 255.
 Aegialitis 237.
 aegyptius (Falco) 155.
 " (Milvus) 138, 139, 154, 155,
 253.
 acucis (Ceuthmochares) 224.
 " (Phoenicophaës) 224, 225, 254.
 aercus (Cuculus) 224.
 " (Zanclostomus) 224.
 afer (Coccytes) 225.
 " (Eurystomus) 139, 158, 253.
 affinis (Cinnyris) 169.
 afra (Chalcopelia) 229.
 " (Columba) 229.
 " (Coracias) 158.
 " (Peristera) 229, 255.
 africana (Heterorrhina) 16.
 " (Ocyode) 136.
 " (Sarcidiornis) 248.
 africanus (Graculus) 135, 252, 255.
 " (Pelecanus) 252.
 " (Phalacrocorax) 252.
 Agama 139.
 Agapornis 149, 150, 213, 214.
 Agelastes 141, 230, 255.
 Agclastus 230.
 agriotides (Megapenthes) 122.
 ahantensis (Francolinus) 147, 231, 255.
 Alauda 174.
 alba (Ardea) 137, 238, 242, 255.
 " (Gymnura) 36, 37.
 " (Herodias) 238.
 " (Phalangista) 93, 96.
 albertisii (Pseudochirus) 107.
 albiceps (Lobivanellus) 147, 236, 255.
 " (Sarciophorus) 236.
 " (Vanellus) 236.
 albicilla (Haliaetus) 154.
 albicollis (Merops) 139, 166, 168, 253.
 albipunctata (Eriocera) 11.
 albocristatus (Anorrhinus) 207.
 " (Berenicornis) 207.
 " (Buceros) 207, 210, 254.
 albus (Cuscus) 93, 96.
 Alcedinidae 253.
 Alcedo 159—162, 166, 253.
 Alestes 144.
 Althe 177, 253.
 Allorhina 43.
 Amadina 201, 202.
 Amauresthes 201, 254.
 americana (Rhea) 267.
 Anastoechus 85.
 Anatidae 255.
 Andropadus 139, 180, 253, 254.
 angolensis (Falco) 154.
 " (Gypohicrax) 154.
 " (Haliaetus) 136, 138, 154,
 155, 191, 253.
 " (Pitta) 139, 175, 253.
 angustum (Ephippium) 59.
 annulosa (Ctenophora) 1.
 Anoa 272.

- anomala (Allorhina) 43.
 Anorrhinus 207.
 Anthothreptes 170.
 Anthrax 81, 83.
 Anthreptes 170, 253.
 Anthus 139, 174, 253.
 Antilope 149, 150, 270, 272.
 Apate 51, 52.
 apicalis (Ptecticus) 62.
 " (Stratiomyia) 60.
 Apoleon 51.
 Apriona 128.
 aquaticus (Ilyaemoschus) 138, 147.
 arborea (Ostrea) 137.
 archeri (Pseudochirus) 24.
 Ardea 137, 147, 238—242, 255.
 Ardeidae 255.
 ardesiaca (Ardea) 238, 255.
 Argyraeoba 83, 84.
 Argyrifa 41, 42, 43.
 argyropyga (Anthrax) 83.
 armata (Hermetia) 68.
 Artomyias 182, 254.
 ashanteus (Ixos) 181.
 Astur 152, 153, 253.
 Asturinula 152.
 ater (Oxylophus) 225.
 atratus (Buceros) 205, 254.
 " (Sphagolobus) 205.
 atricapilla (Ardea) 137, 238, 239, 255.
 atricapillus (Butorides) 239.
 atripennis (Crateropus) 178, 253.
 " (Dierurus) 183, 254.
 " (Tritomidea) 257.
 atripes (Tabanus) 75.
 atropos (Naja) 139.
 attenuata (Filaria) 266.
 Atticora 157.
 audouini (Exoprosopa) 82.
 " (Oxynteropus) 121.
 Aulacodus 138.
 aurantia (Hyphantornis) 188, 254.
 aurantius (Malimbus) 188.
 auratus (Chrysococyx) 225.
 aurea (Nectarinea) 168.
 australis (Phoenicophaës) 225.
 Avicida 155.
- B.**
- badia (Dacelo) 165.
 " (Halcyon) 149, 165, 253.
 banksii (Phalangista) 22.
 Barbatula 216, 217.
 barbatus (Anastoechus) 85, 86.
 " (Criniger) 178, 253.
 " (Pycnonotus) 180, 181, 253.
 " (Trichophorus) 178.
 " (Turdus) 180.
 baruffii (Oriolus) 187.
- basalis (Tabanus) 72.
 batjanensis (Hermetia) 67, 68.
 Baza 139, 147, 155, 253.
 bellicosus (Falco) 152.
 " (Spizaetus) 152, 253.
 " (Termes) 140, 158.
 Berenicornis 207.
 Bias 181, 254.
 Biastes 57, 58.
 bicolor (Amadina) 202.
 " (Massicyta) 68.
 " (Nigrita) 194, 254.
 " (Pytelia) 194.
 " (Spermestes) 202, 254.
 biguttatus (Tabanus) 74.
 bilineata (Megalaima) 216, 217.
 " (Negritomyia) 59.
 bilineatum (Stratiomys) 59.
 bipartita (Caenacantha) 59.
 bipunctatus (Pelargoderus) 43.
 " (Tabanus) 75.
 bipustulata (Tritoma) 257.
 bispinosa (Phyllophora) 58.
 bivittata (Clitellaria) 59.
 Blaesia 43.
 Bombyliidae 81.
 Bombylius 85, 86.
 Bos 138.
 Botaurus 240, 255.
 bougainvillei (Phalangista) 22.
 " (Trichurus) 22.
 Brachyalestes 144.
 brachyceros (Bos) 138.
 brachyptera (Hyphantornis) 189, 190,
 254.
 brachypterus (Ploceus) 189.
 brachyrhynchus (Dendromus) 220.
 " (Oriolus) 186, 187, 254.
 brevicaudata (Camaroptera) 173, 253.
 " (Sylvia) 173.
 brevicaudatus (Cuscus) 108, 110.
 " (Eucuscus) 108.
 brevipennis (Ptecticus) 63.
 " (Sargus) 63.
 brevispina (Neritina) 50.
 brunii (Macropus) 96.
 Buccanodon 216.
 Bucco 217.
 Bucconidae 254.
 Buceros 204—210, 254.
 Bucerotidae 254.
 Budytes 174.
 Bufo 147.
 Butorides 239.
 Bycanistes 206.
- C.**
- Caecilia 139.
 Caenacantha 58.

- cafer (Coccytes) 225, 255.
 Calamoherpe 172.
 calceolata (Ardea) 238
 callithrichus (Cercopithecus) 149.
 Calodema 31.
 calva (Columba) 226.
 " (Megalaima) 217.
 " (Treron) 137, 226, 255.
 calvus (Bucco) 217.
 " (Gymnobucco) 217, 218, 254.
 " (Gymnocranus) 217.
 Camaroptera 173, 253.
 camelus (Struthio) 267.
 Campothera 220, 221, 254.
 Camposteranus 120.
 camurus (Buceros) 207, 210, 211, 254.
 " (Tockus) 210, 211.
 candida (Gymnura) 36.
 canescens (Phalangista) 22.
 " (Pseudochirus) 22.
 " (Scolopax) 244.
 " (Totanus) 136, 244, 255.
 canicapilla (Xenocichla) 178.
 canicapillus (Criniger) 178, 253.
 " (Trichophorus) 178.
 canina (Phalangista) 25, 26, 27.
 Canis 270.
 cantiaea (Sterna) 249, 255.
 cantianus (Charadrius) 237, 255.
 Capito 218.
 Caprimulgidae 253.
 Caprimulgus 156, 253.
 caroli (Campothera) 221, 254.
 " (Chloropicus) 221.
 " (Dendromus) 221.
 " (Pardipicus) 221.
 castanea (Tipula) 4.
 castaneofusca (Hyphantornis) 190, 191,
 192, 254.
 castanofuscus (Ploceus) 192.
 castanonota (Alethe) 177.
 caudivolvula (Didelphis) 21, 22.
 caudivolvulus (Pseudochirus) 22, 24.
 cavifrons (Phalangista) 93, 96.
 celebensis (Cuscus) 87, 88, 91, 94, 96,
 104, 105, 106.
 " (Strigocensus) 94, 96, 105.
 Centropus 222, 223, 224, 254.
 Cephalophorus 270.
 Cephalophus 149, 270.
 Ceratogymna 204.
 Cercocebus 141.
 Cercopithecus 138, 141, 149.
 cerioides (Hermetia) 67.
 " (Massicyta) 67, 68.
 Certhia 168, 169.
 Ceryle 137, 160, 161, 253.
 Cetonina 123.
 Ceuthochares 224.
 Chalcopeia 228.
 Charadriidae 255.
 Charadrius 237, 255.
 Chelonia 136.
 Chettusia 235.
 chiguancoides (Turdus) 176.
 chloris (Nicator) 185, 254.
 " (Telagra) 185.
 Chlorocichla 180.
 Chloropicus 219, 221.
 chloropygia (Cinnyris) 169, 170, 253.
 " (Nectarinea) 169.
 Choeropsis 149.
 Chromis 144.
 Chrysococcyx 225, 255.
 Chrysodema 16.
 Chrysops 79—81.
 chrysorrhos (Cuscus) 108.
 " (Phalangista) 108, 109,
 110, 114, 115.
 " (Spilocensus) 108, 110.
 Ciconia 137, 242, 255.
 cinetus (Tabanus) 72.
 cinerascens (Fraseria) 184, 254.
 cinereifrons (Dacelo) 162, 163.
 " (Haleyon) 162, 163, 164,
 165.
 cingulata (Exoprosopa) 82.
 cinnamomeus (Caprimulgus) 156, 253.
 Cinnyris 168, 169, 170, 253.
 Circus 151, 253.
 Cisticola 171, 172, 253.
 Cladurus 216.
 Clarias 144, 147.
 elimacurus (Scotornis) 156.
 Clitellaria 59.
 Clithon 49.
 coccineus (Pyrenestes) 200.
 Coccytes 225, 255.
 Coelidia 16.
 Coliostruthus 197.
 collaris (Anthothreptes) 170.
 " (Merops) 167.
 Colobus 138, 141, 147, 149, 150.
 Columba 149, 226, 227, 255.
 Columbidae 255.
 Comastes 85.
 Comatibus 243.
 comptus (Epomophorus) 35.
 confluens (Chrysops) 81.
 congius (Dendrobates) 221.
 congruens (Tipula) 4.
 cookii (Phalangista) 22.
 Coraciidae 253.
 Coracias 158.
 coracinus (Dicrurus) 183.
 coriacea (Dermatochelys) 136.
 coronata (Xylocopa) 54.
 Corvidae 254.
 Corvus 186, 254.
 Corythaix 202, 254.

Corythornis 159.
 Cossypha 139, 176, 177, 253.
 crassirostris (Treron) 226.
 Crateropus 178, 253.
 crepitans (Oedienemus) 232.
 Crictomys 141.
 Criniger 139, 177—180, 253.
 cristata (Alcedo) 159.
 " (Corythornis) 159.
 " (Numida) 147, 230, 255.
 cristatus (Malimbus) 195.
 " (Sycobius) 195, 254.
 " (Vanellus) 235.
 crocata (Pachyrhina) 8.
 crocea (Alauda) 174.
 croceus (Macronyx) 138, 174, 253.
 Crocodilus 136, 138, 147.
 Cryptoderma 54.
 Ctenophora 1, 2, 3.
 Cneulidae 254.
 cucullata (Ardea) 242.
 cucullatus (Nycticorax) 242.
 cuculoides (Avicida) 155.
 " (Baza) 139, 147, 155, 253.
 Cuculus 223, 224, 225.
 cultratus (Buceros) 204.
 cumingi (Oxypterus) 121.
 cupreus (Chrysoeocyx) 225, 255.
 " (Cuculus) 225.
 cursor (Oeypode) 136.
 curvirostris (Corvus) 186.
 Cuscus 87.
 cuvieri (Phalangista) 25.
 cyanea (Muscipapa) 182.
 " (Platystira) 182, 184, 254.
 cyanocephala (Nectarinea) 168.
 cyanoleuca (Alcedo) 162.
 " (Haleyon) 162, 253.
 cyanostigma (Alcedo) 159, 253.
 " (Corythornis) 159.
 cyanotis (Alcedo) 160.
 cylindricus (Buceros) 206, 254.
 " (Bycanistes) 206.
 Cyndrotoma 11.
 Cyphogastra 16.
 Cyrtotriplax 257.
 Cysticola 139

D.

Dacelo 161—166.
 Dalara 54.
 Damalis 270.
 Darala 54.
 Dasycephala 179.
 degenerata (Parastasia) 16.

Deletocephalus 267.
 deliensis (Onthophagus) 18.
 Dendrobates 221.
 Dendrolagus 25.
 Dendrocygna 136, 248, 255.
 Dendromus 220, 221.
 Dendropicus 219, 220, 254.
 denticeps (Orthogramma) 30.
 " (Platynema) 30.
 depressicornis (Anoa) 272.
 Dermatoehelys 136.
 Diabasis 81.
 Diachlorus 81.
 Dicruridae 254.
 Dicrurus 138, 183, 254.
 Didelphidius 96.
 Didelphis 21, 22, 93, 96.
 dimidiatus (Chrysops) 80.
 " (Deletocephalus) 267.
 " (Strongylus) 267.
 distigma (Anthrax) 83.
 " (Argyramoeba) 83.
 distinctus (Necrophorus) 262.
 diuroides (Tetraglenes) 44.
 diversipes (Diabasis) 81.
 " (Diachlorus) 81.
 Doehmius 265.
 doria (Antilope) 149, 270, 272.
 " (Cephalopus) 149, 270.
 dorsilinea (Tabanus) 71.
 doryea (Exoprosopa) 81.
 dorycus (Anthrax) 81.
 douglassii (Strongylus) 267.
 dryas (Dacelo) 162.
 " (Haleyon) 162—165.
 Drymoeca 171, 172.
 Dryoscopus 183¹⁾, 185, 254.
 duchailni (Barbatula) 216.
 " (Buccanodon) 216.
 " (Cladurus) 216.
 " (Megalaima) 216, 254.
 " (Pogonias) 216.
 " (Xylobuceo) 216.
 duodecimpunctatus (Peltodytes) 55.
 duodenalis (Doehmius) 265.

E.

edax (Apoleon) 52.
 edolioides (Melaenornis)²⁾ 183, 184, 254.
 " (Melasoma)²⁾ 183.
 egretta (Ardea) 238.
 elata (Ceratogymna) 204.
 Elater 120.
 elatus (Buceros) 204, 205, 254.
 electricus (Malapterurus) 144.

1) see correction on page V (Contents).

2) must be changed in "Dryoscopus leucorhynchus".

Emberiza 197.
 Ephippium 59.
 episcopus (Ciconia) 137, 242, 255.
 Epomophorus 35.
 equestris (Tabanus) 77.
 Eriocera 11, 12, 13.
 erythacus (Pittacus) 149, 212—214.
 erythropus (Xerus) 139.
 erythrogastra (Halcyon) 166.
 erythroprys (Turtur) 227, 228.
 erythropus (Euplectes) 194.
 " (Foudia) 194.
 " (Ploceus) 194, 254.
 erythropterus (Lanius) 185.
 " (Merops) 139, 167, 253.
 " (Telephonus) 185.
 erythropus (Nisus) 153.
 erythrorhynchus (Vidua) 197.
 Eucuscus 108, 110.
 Eudmeta 69.
 Euplectes 194, 195, 254.
 Eurycephalus 128.
 Euryornia 16.
 Eurystomus 138, 139, 158, 159, 253.
 Eutropius 144.
 Euxestus 257.
 Evasa 57.
 eximius (Crimiger) 179, 253.
 " (Trichophorus) 179.
 Exoprosopa 81, 82.

F.

Falco 152.
 fasciatus (Buceros) 208, 209.
 " (Tabanus) 75.
 felderi (Tabanus) 78.
 felina (Phalangista) 25, 27.
 " (Trichurus) 25.
 ferruginosa (Eriocera) 13.
 Filaria 266.
 fissipes (Sterna) 250.
 Fissurella 136.
 fistulator (Buceros) 206, 254.
 " (Pholidophalus) 206.
 flammiceps (Euplectes) 194, 254.
 " (Pyromelana) 194.
 flava (Motacilla) 139, 174, 253.
 flavimana (Ardea) 238.
 flavipes (Subula) 70.
 flavirostris (Ardea) 238.
 " (Limnecorax) 245.
 " (Phoenicophaës) 224.
 " (Rhynchops) 136, 251, 255
 flavitarsis (Zonopterus) 127.
 flavoscutellata (Stratiomyia) 60.
 fluviatilis (Sterna) 250, 255.
 forbesii (Xylocopa) 54.
 formicaeformis (Sargus) 65.
 forsteni (Onthophagus) 18.

Foudia 194.
 francisci (Centropus) 222, 254.
 Francolinus 147, 231, 255.
 Fraseria 184, 254.
 Fringillidae 254.
 fringilloides (Amadina) 201.
 " (Amauresthes) 201, 202,
 254.
 " (Ploceus) 201.
 " (Spermestes) 201.
 frons (Megaderma) 35.
 frontatus (Crocodylus) 136, 147.
 fuliginosa (Certhia) 168.
 " (Cinnyris) 168, 253.
 " (Nectarinea) 168.
 " (Phalangista) 25.
 fulvitemma (Glycyphana) 16.
 fuscana (Megistocera) 3.
 " (Nematocera) 3.
 fuscipennis (Orthogramma) 30.
 " (Platynema) 30.
 fusiformis (Tetraglenes) 46.

G.

galbula (Oriolus) 187.
 gambensis (Cricetomys) 141.
 " (Dryocopus) 185, 186, 254.
 " (Lanius) 185.
 " (Plectropterus) 147, 247,
 255.
 gambianus (Epomophorus) 35.
 Geronticus 242.
 gigantea (Musophaga) 203.
 giganteus (Turdus) 203, 254.
 glareola 142, 233, 255, 256.
 glottis (Totanus) 244.
 Glycyphana 16, 124.
 Gnaphaloryx 39, 41.
 gollini (Capito) 218.
 " (Trachyphonus) 218, 254.
 gouldi (Anthus) 139, 174.
 gracilirostris (Andropadus) 180, 254.
 " (Chlorocichla) 180.
 Graculus 138, 252, 255.
 grandis (Zonopterus) 127.
 Grapsus 136.
 griseus (Hapalemur) 33, 34.
 grisola (Muscicapa) 182, 254.
 gularis (Ardea) 238, 242, 255.
 " (Eurystomus) 139, 159, 253.
 " (Merops) 167, 253.
 " (Turdinus) 178, 253.
 guttata (Spermospiza) 198, 199.
 Gymnetis 16.
 Gymnobucco 217, 254.
 Gymnoceranus 217.
 gymnotis (Cuscus) 94, 97.
 " (Phalangista) 94, 97.
 Gymnura 36, 38.
 Gypohierax 154.

H.

- haematina (Spermospiza) 198, 254.
 haematopus (Himantornis) 245, 255.
 haesitatus (Numenius) 243.
 hagedash (Geronticus) 242.
 " (Ibis) 147, 242, 255.
 " (Tantalus) 242.
 hageni (Protaetia) 124.
 Haleyon 137, 149, 161, 162, 163, 164,
 165, 166, 253.
 Haliaetus 136, 138, 154, 155, 191, 253.
 hamata (Gymnetis) 16.
 Hapalemur 33, 34.
 harmseni (Oxypterus) 120.
 hartlaubi (Accipiter) 153.
 " (Buceros) 209, 212, 254.
 " (Nisus) 153, 253.
 " (Toekus) 209.
 Hemibelidius 24.
 Hemichromis 144.
 herbertensis (Phalangista) 24.
 Hermetia 67, 68.
 Herodias 238.
 Herpestes 35.
 Heterorrhina 16.
 hiaticula (Aegialitis) 237.
 " (Charadrius) 237, 255.
 hilpa (Eriocera) 12, 13.
 " (Pteroscopus) 12.
 Himantornis 245, 255.
 Hipponyx 136.
 Hippopotamus 141, 149, 150.
 hirsutus (Pogonias) 215.
 " (Pogonorhynchus) 215, 254.
 Hirundinidae 253.
 Hirundo 157, 158, 253.
 hirundo (Sterna) 250.
 Hister 130.
 hucti (Allorhina) 43.
 Hyamoschus 138, 147.
 hyalina (Anthrax) 83.
 Hydrochelidon 250, 255.
 Hyphantornis 188, 189, 190, 191, 192,
 193, 254.
 hypodelos (Nectarinea) 170.
 hypodilus (Anthreptes) 170, 253.
 " (Nectarinea) 170.
 hypoglaucis (Allorhina) 43.
 hypoleucos (Actitis) 244, 255.

I.

- Ibis 147, 242, 243, 255.
 icterorhynchus (Turdus) 176.
 illucens (Ptecticus) 63.
 imbricata (Chelonia) 136.
 immanis (Tabanus) 71.
 impendens (Evasa) 57.
 " (Nerua) 57.

- inamoena (Solva) 70.
 " (Subula) 70.
 incunetans (Ctenophora) 1.
 indecora (Neuria) 85.
 indica (Tinda) 57.
 Indicator 219, 254.
 indicus (Blastes) 57, 58.
 " (Tapirus) 272.
 infusata (Heterorrhina) 16.
 inornata (Chettusia) 235.
 inornatus (Ixos) 181.
 " (Vanellus) 139, 147, 235,
 255.
 insignis (Tetraglenes) 46.
 insularis (Laemophloeus) 47.
 innustus (Dendrolagus) 25.
 iriditorques (Columba) 227, 255.
 " (Turturoena) 227.
 ispida (Alcedo) 160.
 Ispidina 160.
 Ixos 181.

J.

- japonica (Stratiomyia) 60.
 javanica (Cyphogastra) 16.
 javanicus (Silvanus) 48.
 javensis (Oligoneura) 11.

K.

- koelreuteri (Periophthalmus) 137, 240.

L.

- laconica (Pachyrhina) 9.
 Laemophloeus 47.
 laetus (Sargus) 66.
 Lanarius 150, 185.
 Laniidae 254.
 Lanius 185.
 lansbergei (Allorhina) 43.
 lanuginosus (Pseudochirus) 22.
 Laridae 255.
 lateralis (Cisticola) 171, 253.
 " (Drymoeca) 171.
 lathamii (Francolinus) 231, 255.
 latifascia (Ptecticus) 64.
 " (Sargus) 64.
 latipes (Tabanus) 75.
 latirostris (Andropadus) 180, 253.
 lemurina (Didelphis) 25.
 " (Trichosurus) 25.
 lemuroides (Hemibelidius) 24, 25.
 leoninus (Ptecticus) 63.
 Leptophyllus 121.
 Lepturoides 121.
 leucaspis (Tabanus) 74.
 leucocephala (Ciconia) 242.
 leucogaster (Pholidauges) 138, 187, 254.

- leucogaster (Turdus) 187.
 leucolaima (Barbatula) 216.
 " (Megalaima) 216, 217, 254.
 leucolopha (Ardea) 147, 240.
 leucolophum (Tigrosoma) 240.
 leucolophus (Botaurus) 240, 255.
 leuconoe (Exoprosopa) 82.
 leuconota (Ardea) 147, 241.
 leuconotus (Nycticorax) 241, 242, 255
 leucopleura (Xenocichla) 179.
 leucopleurus (Criniger) 179, 253.
 " (Phyllastrephus) 179.
 leucopyga (Tipula) 6.
 leucopygus (Systoechus) 86.
 leucorhynchus (Dryoseopus) ¹) 183.
 leucostola (Eriocera) 13.
 leucurus (Ilerpestes) 35.
 levallantii (Plotus) 251, 255.
 " (Turtur) 228.
 liberiensis (Choeropsis) 149.
 " (Hippopotamus) 141, 156.
 limbiventris (Toxocera) 69.
 Limnobia 11, 14.
 Limnocorax 245.
 linearis (Lepturoides) 122.
 littoralis (Charadrius) 237.
 Littorina 136.
 liturata (Gymnetis) 16.
 Lobivanellus 147, 236, 255.
 longicaudus (Caprimulgus) 156.
 " (Scotornis) 156, 253.
 longiceps (Antelope) 272.
 " (Cephalopus) 272.
 " (Terphone) 272.
 " (Terpone) 272.
 longirostris (Anastoechus) 85.
 lowii (Ptilocercus) 37.
 Loxia 190, 197.
 lucens (Anthrax) 83.
 lucida (Hirundo) 158.
 lugubris (Dendropicus) 220, 254.
 luholtzi (Dendrolagus) 25.
 lundii (Eurycephalus) 128.
 Lusciniadae 253.
 Lutra 144.
- M.**
- macrobrachion (Palaemon) 144.
 macrocelides (Nisus) 153, 253.
 Macronyx 138, 174, 253.
 macroptera (Sterna) 250.
 Macropus 96.
 macrorhyncha (Musophaga) 203.
 macrorhynchus (Corythaix) 202, 254.
 macrocelides (Astur) 153.
 macroura (Loxia) 197.
 " (Penthetria) 197, 254.
 " (Vidua) 197.
 macrourus (Circus) 151, 253.
 " (Coliostruthus) 197.
 " (Cuscus) 108, 109, 111.
 macurus (Circus) 151.
 mactans (Sargus) 65, 66.
 maculata (Phalangista) 107, 108, 109.
 maculatus (Cuscus) 87—91, 95, 107—
 111, 113, 118.
 " (Grapsus) 136.
 " (Spilocuseus) 108, 110.
 maculipennis (Rhyphus) 14.
 maculosa (Carnophora) 220, 254.
 maculosus (Picus) 220.
 maderensis (Pachyrhina) 8.
 major (Indicator) 219.
 Malapterurus 144.
 malimbica (Dacelo) 162, 163.
 " (Halcyon) 137, 162, 163,
 164, 165, 253.
 Malimbus 188, 195, 196.
 " (Sycobius) 195.
 Manatus 144, 147.
 marginata (Coelidia) 16.
 " (Endmeta) 69.
 " (Hermetia) 69.
 " (Subula) 70.
 Massicyta 67, 68.
 maxillosus (Eurycephalus) 128.
 maxima (Aleo) 160.
 " (Ceryle) 137, 160, 161, 253.
 Megaderma 35.
 Megalaema 216.
 Megalaima 216, 217, 254.
 Megapenthes 122.
 megapoda (Glaucola) 142, 233, 234,
 255, 256.
 megapodia (Glaucola) 233.
 Megistocera 3, 7.
 melamprosope (Laniarius) 150.
 melanesiae (Hermetia) 68.
 melania (Argyramoeba) 84.
 melanocephala (Loxia) 190
 melanoptera (Platystira) 182.
 melanorhyncha (Ardea) 238.
 " (Drymoeca) 171.
 melanota (Anas) 248
 melanotos (Anas) 248.
 " (Sarcidiornis) 248, 255.
 melanotus (Sarcidiornis) 248.
 melanura (Phalangista) 26.
 " (Trichurus) 26.
 meleagrides (Agelastes) 141, 230, 255.
 " (Agelastus) 230.
 Meropidae 253.
 Merops 139, 166, 167, 253.

1) in stead of "Melaenornis edolioides" as is erroneously printed.

- Mesopicus 219, 254.
 Metallactulus 54.
 Metallactus 54.
 metallinus (Sargus) 65.
 Miconisus 152, 153.
 midas (Chelonia) 136.
 migrans (Milvus) 155.
 miles (Gnaphaloryx) 41.
 Milvus 138, 139, 154, 155, 253.
 miniatus (Lepturoides) 121.
 minimus (Tabanus) 71.
 minullus (Nisus) 153.
 modestus (Dicerurus) 183, 254.
 modifera (Tinda) 57.
 molybdopneues (Struthio) 263.
 monachus (Centropus) 223, 224.
 Monitor 136.
 monogrammica (Asturinaula) 152.
 monogrammicus (Astur) 152, 253.
 " (Paleo) 152.
 " (Micronisus) 152.
 mordax (Termes) 140.
 Mormyrops 144.
 Motacilla 139, 173, 174, 253.
 mucronatus (Elater) 120.
 multipunctatus (Tabanus) 72.
 musanga (Paradoxurus) 36.
 Muscicapa 182, 254.
 Muscicapidae 254.
 musicus (Bias) 181, 182, 254.
 " (Platyrhynchus) 181.
 Musophaga 203.
 Musophagidae 254.
 musschenbroekii (Paradoxurus) 36.
 mutica (Odontomyia) 62.
 Mycetophagus 257.
 mystacalis (Anthus) 174.
 mystacea (Drymoea) 171.
 " (Prinia) 171, 253.
- N.**
- nagtglasii (Buceros) 209.
 Naja 139.
 nasicornis (Vipera) 139.
 Neerophorus 262.
 Nectarinea 168, 169, 170.
 Nectariniidae 253.
 Negritomyia 59.
 Nematocera 3.
 Neritina 49.
 Nerua 57.
 Neuria 85.
 Nicator 185, 254.
 niger (Limnocorax) 245.
 " (Rallus) 245.
 nigra (Hydrochelidon) 250, 255.
 " (Ortygometra) 245, 255.
 " (Porzana) 245.
 " (Sterna) 250.
- nigricans (Scotornis) 157.
 nigriceps (Prionota) 2.
 " (Terpsiphone) 181, 254.
 " (Tschitrea) 181.
 nigripes (Eurycephalus) 128.
 nigrirostris (Odontomyia) 62.
 Nigrita 194, 254.
 " (Atticora) 157.
 " (Hirundo) 157.
 " (Waldenia) 157, 235, 253.
 nigro-annulata (Pachyrhina) 8.
 Nisus 153, 253.
 nitens (Malimbus) 196.
 " (Sycobius) 196, 254.
 nivosa (Campothera) 221, 254.
 nivosus (Dendromus) 221.
 " (Trichophorus) 179.
 Notopterus 144.
 nuchale (Syrnium) 139, 151, 253.
 nuchalis (Glareola) 233.
 " liberiae (Glareola) 233.
 nudicaudata (Phalangista) 108, 110.
 nudirostris (Treron) 226.
 Numenius 136, 243, 255.
 Numida 147, 230, 255.
 Numididae 255.
 Nycticebus 141.
 Nycticorax 241, 255.
- O.**
- occipitalis (Rana) 147, 157.
 ochropus (Cuscus) 108, 110.
 oclaria (Hyphantornis) 189, 190.
 Oeypode 136.
 Odontomyia 61, 62.
 Oedinemus 136, 232, 255.
 oleracea (Tipula) 6.
 Oligoneura 11.
 olivacea (Ibis) 243, 255.
 olivaceus (Comatibus) 243.
 " (Dendropicus) 220.
 olliffi (Platynema) 29.
 Onthophagus 17, 18, 130.
 Ophioccephalus 134, 147.
 Ophioproctus 139.
 opossum (Didelphidus) 96.
 orientalis (Cuscus) 87—91, 93—97,
 104, 106, 107, 109, 118.
 " (Didelphis) 93.
 " (Phalangista) 94, 96.
 " (Rhynehops) 251.
 Oriolidae 254.
 Oriolus 186, 190, 254.
 ornatus (Cuscus) 91, 95, 96, 97, 104.
 Orthogramma 29.
 ortiva (Pachyrhina) 9.
 Ortygometra 245, 255.
 Ostrea 137.
 ostrinus (Pyrenestes) 200.

Oxylophus 225.
 Oxyuopterus 120.
 Oxyrhynchus 54.

P.

Pachyrhina 8, 9, 10.
 Pachyteria 126.
 pacificus (Oonthophagus) 17.
 Palacemon 144.
 pallens (Pocillostola) 13.
 pallipes (Evasa) 57.
 pantherinus (Bufo) 147.
 papuensis (Phalangista) 107, 109
 Paradoxurus 35
 parasitus (Milvus) 155.
 Parastasia 16.
 Pardipicus 221.
 Patella 136.
 Pelargoderus 43.
 Pelceanidae 255.
 Pelceanus 252.
 peli (Francolinus) 232.
 " (Gymnobucco) 217, 218.
 " (Laniarius) 185.
 pelios (Turdus) 176, 253.
 pelops (Anthrax) 81
 Peltodytes 55.
 penicillatus (Sus) 138, 141.
 Penthetria 197, 254.
 perforatus (Gnaphaloryx) 39.
 Periophthalmus 137, 240.
 Peristera 228, 229, 255.
 permista (Campothera) 220.
 personatus (Pyrenestes) 199, 200, 254.
 phaopus (Namenius) 136, 243, 255.
 Phalacrocorax 252.
 Phalangista 22, 24, 25, 93, 96.
 Phalops 19.
 phantoma (Tetraglenes) 46.
 Philagathes 128.
 Phoenicophaës 224, 254.
 Phoenicopterus 246, 255.
 Pholidauges 138, 187, 254.
 Pholidophalus 206.
 Phyllastrephus 179.
 Phyllophora 58.
 Picidae 254.
 picta (Agapornis) 214.
 " (Alcedo) 160, 253.
 " (Ispidina) 160.
 pictipennis (Tabanus) 77.
 pictus (Todus) 160.
 Picus 219, 220.
 pilifera (Cetonia) 124.
 " (Glycyphana) 124.
 pilosula (Tipula) 5.
 Pitta 139, 175, 253.
 Platynema 29.
 Platyrhynchus 181.

Platystira 182, 254.
 Plectropterus 147, 247, 255.
 Ploceus 189, 192, 194, 254.
 Plotus 251, 255.
 Pocillostola 13, 14.
 pocsis (Cossypha) 176, 253.
 Pogonias 215, 216.
 Pogonorhynchus 215, 254.
 poliocephala (Alethe) 177, 253.
 poliocephalus (Criniger) 177.
 " (Trichophorus) 177.
 Polyeaon 51, 52.
 polycomus (Colobus) 147, 149, 150.
 Porzana 245
 principalis (Emberiza) 197.
 " (Vidua) 197, 254.
 Prinia 171, 253.
 Prionota 1.
 Protaetia 124.
 Pseudochirus 21, 22, 24, 107.
 Psittacidae 254.
 Psittacula 214, 254.
 Psittacus 149, 212, 254.
 Ptecticus 62, 63, 64, 65.
 Pteroscopus 12.
 Ptiloecercus 37.
 pubescens (Sargus) 67.
 puella (Chalcopelia) 228.
 " (Peristera) 228, 255.
 pulchellus (Bombylius) 85.
 pulchrirostris (Buceros) 210, 211.
 pullaria (Agapornis) 149, 213.
 punctatissima (Apriona) 128.
 puncticollis (Parastasia) 16.
 Purpuricenus 128.
 Pycnonotus 139, 180, 254.
 Pyrenestes 199, 202, 254.
 Pyromelana 194.
 pyrrhogaster (Chloropicus) 219.
 " (Dendropicus) 219.
 " (Mesopicus) 219, 254.
 " (Picus) 219.
 pyrrhonotus (Anthus) 174, 253.
 Pytelia 194, 201, 254.

Q.

quadripustulatus (Mycetophagus) 257.
 quadrivittata (Pachyrhina) 9.
 quoyi (Phalangista) 107, 109.

R.

rafflesii (Gymnura) 36, 37.
 Rallidae 255.
 Rallus 245.
 Rana 147, 157.
 rarispina (Neritina) 50.
 rayi (Budytes) 174.
 Rhaphiocera 59.

Rhea 267.
 rhinoceros (*Vipera*) 139.
 rhombeata (*Naja*) 139.
 Rhynchops 136, 251, 255.
 Rhyphidae 14.
 Rhyphus 14, 15.
 ribbei (*Calodema*) 31.
 rotundatus (*Peltodytes*) 55, 56.
 rubens (*Lepturoides*) 122.
 rubidus (*Tabanus*) 71.
 rubricollis (*Malimbus*) 195.
 " (*Sycobius*) 195, 254.
 " (*Textor*) 195.
 rudis (*Alcedo*) 161.
 " (*Ceryle*) 137, 161, 253.
 rufa (*Cisticola*) 172, 253.
 " (*Drymoeca*) 172.
 " (*Phalangista*) 93, 96.
 rufescens (*Ptecticus*) 62.
 " (*Turdirostris*) 150.
 ruficornis (*Odontomyia*) 61.
 ruficrista (*Cephalophus*) 273.
 rufiventris (*Halcyon*) 166.
 rufo-brachiatus (*Sciurus*) 35.
 rufosignatus (*Phalops*) 19.
 rufovelatus (*Euplectes*) 195.
 rugosicollis (*Parastasia*) 16.
 rugosus (*Pelargoderus*) 44.
 rustica (*Hirundo*) 158, 253.

S.

salar (*Salmo*) 260.
 saleyeri (*Megapenthes*) 122.
 Salmo 260.
 Salmonidae 259.
 sancti pauli (*Exoprosopa*) 82.
 sanguineus (*Pyrenestes*) 200.
 sanguinolentus (*Purpuricenus*) 128.
 Sarcidiornis 248, 255.
 Sarciphorus 236.
 Sargus 63, 64, 65, 66, 67.
 scapulatus (*Corvus*) 186, 254.
 scenopinoides (*Evasa*) 57.
 " (*Nerua*) 57.
 schistacea (*Ardea*) 238.
 schlegeli (*Pytelia*) 201, 254.
 Scincus 139.
 Sciurus 35.
 Sclerostoma 263.
 scolopacea (*Barbatula*) 217.
 " (*Megalaima*) 217, 254.
 scolopaceus (*Xylobucco*) 217.
 Scolopacidae 255.
 Scelopax 244.
 Scotornis 156, 253.
 scriptus (*Tragelaphus*) 138.
 scutatus (*Malimbus*) 196.
 " (*Sycobius*) 196, 254.
 semicaerulea (*Alcedo*) 166.

semicaerulea (*Dacelo*) 166.
 " (*Halcyon*) 166, 253.
 semifasciatus (*Buccros*) 207, 208, 254.
 " (*Tockus*) 208.
 semitigrinus (*Pelargoderus*) 43.
 semitorquata (*Columba*) 227.
 semitorquatus (*Turtur*) 227, 228, 229,
 255.
 senegalensis (*Alcedo*) 161.
 " (*Centropus*) 223, 224, 254.
 " (*Cuculus*) 223.
 " (*Dacelo*) 161, 162.
 " (*Halcyon*) 161, 162, 163,
 253.
 " (*Manatus*) 144, 147.
 " (*Sterna*) 250.
 senegalus (*Lanius*) 185.
 " (*Telephonus*) 185.
 " (*Telophonus*) 185, 254.
 serrata (*Tipula*) 5.
 Sesarma 137.
 sieboldii (*Euryomia*) 16.
 Silvanus 48.
 simus (*Hapalemur*) 33, 34.
 Solva 70.
 Spermestes 201, 202, 254.
 Spermospiza 198, 254.
 Sphagolobus 205.
 Spilocus 108.
 spinigerum (*Ephippium*) 59.
 spinithorax (*Rhaphiocera*) 59.
 Spizaetus 152, 253.
 splendens (*Cyphogastra*) 16.
 Spondotriplax 257.
 stangeri (*Sciurus*) 35.
 stellatus (*Monitor*) 136.
 Sterna 249, 250, 255.
 stictithorax (*Indicator*) 219.
 stigmaticus (*Paradoxurus*) 35.
 strachani (*Leptophyllus*) 121.
 Stratiomyia 60.
 Stratiomys 59, 61.
 striatus (*Chrysops*) 79.
 " (*Tabanus*) 71.
 Strigidae 253.
 Strigocuculus 94, 96.
 Strongylus 267.
 Struthio 263, 267.
 struthionis (*Sclerostoma*) 263.
 sturmii (*Ardea*) 240.
 " (*Botaurus*) 240, 255.
 Sturnidae 254.
 subarquata (*Tringa*) 244, 255.
 subcollaris (*Nectarinea*) 170.
 subfasciata (*Argyripta*) 41.
 subocellata (*Cithon*) 49.
 " (*Neritina*) 49.
 substituta (*Limnobia*) 14.
 Subula 70.
 sumatrensis (*Peltodytes*) 55.

superciliosa (*Drymoeca*) 171.
Sus 138, 141.
 suspectus ¹⁾ (*Zonopterus*) 125.
swainsonii (*Circus*) 151.
swindereni (*Psittacula*) 214.
swinderianus (*Aulacodus*) 138.
swinderniana (*Agapornis*) 149, 150, 213,
 214.
 " (*Psittacula*) 214, 254.
swindernianus (*Psittacus*) 214.
Sycobius 195, 196, 254.
Sylvia 173.
sylvicultrix (*Antilope*) 149, 150.
syndactyla (*Dasycephala*) 179.
 " (*Xenocichla*) 179, 253.
Syrniua 139, 151, 253.
Systoechus 86.

T.

Tabanidae 71.
Tabanus 71—78.
Tantalus 242.
Tapirus 272.
Telagra 185.
Telephonus 138, 185.
Telophonus 185, 254.
tenebrica (*Clitellaria*) 59.
tenebrifer (*Sargus*) 63.
tenuis (*Tipula*) 7.
Termes 140, 158.
Terphone 272.
Terpone 272.
Terpsiphone 181, 254.
Tetraglenes 44, 46.
Tetraonidae 255.
textor (*Hyphantornis*) 190, 191, 193,
 254.
 " (*Oriolus*) 190.
Thelphusa 137.
tigris (*Apriona*) 128.
Tigrosoma 240.
timch (*Psittacus*) 149, 212—214, 254.
Tinda 57, 58.
Tipula 4—7.
Tockus 208, 209, 210.
Todus 160.
Totanus 136, 244, 255.
Toxoceera 69.
Trachyphonus 218, 254.
Tragelaphus 138.
Treton 137, 226, 255.
Trichophorus 177, 178, 179.
Trichosurus 21, 25.
Trichurus 22, 25, 26.
tricolor (*Hyphantornis*) 193, 254.

tricuspis (*Gnaphaloryx*) 41.
Tringa 244, 255.
triplasia (*Pachyrhina*) 10.
Triplax 257.
tripunctata (*Anthrax*) 83.
Tritoma 257.
Tritomidea 257.
trivirgatus (*Paradoxurus*) 36.
trogodyta (*Anthrax*) 83.
 " (*Bibio*) 83.
trutta (*Salmo*) 260.
Tschitrea 181.
Tupaja 38.
Turacus 203, 254.
Turdidae 253
Turdinus 178, 253.
Turdirostris 150.
turdoides (*Acrocephalus*) 172, 253.
 " (*Calamoherpe*) 172.
Turdus 139, 176, 180, 185, 253.
Turtur 227, 228, 255.
Turturoena 227.
Tympanistria 229.
tympanistria (*Columba*) 229.
 " (*Peristera*) 229, 255.
 " (*Tympanistria*) 229.
Typhlops 139.

U.

umbrina (*Tipula*) 4.
unduliventer (*Nisus*) 153.
unicincta (*Columba*) 149, 226, 255.
ursina (*Phalangista*) 118.
ursinus (*Colobus*) 149.
 " (*Cuscus*) 87, 88, 91, 95, 105,
 107, 118.
usseri (*Artomyias*) 182, 254.

V.

vanderwulpi (*Tabanus*) 78.
Vanellus 139, 147, 235, 255.
varia (*Subula*) 70.
variabilis (*Eurycephalus*) 128.
variegatus (*Indicator*) 219, 254.
vellerosus (*Colobus*) 149.
velutina (*Ctenophora*) 1.
ventricosa (*Chrysodema*) 16.
 " (*Cyphogastra*) 16.
ventrimacula (*Anthrax*) 81.
venusta (*Certhia*) 169.
 " (*Cinnyris*) 169, 253.
 " (*Nectarinea*) 169, 170.
venustus (*Cinnyris*) 169, 170.
vermiculatus (*Oedienemus*) 136, 232,
 255.

1) Correction: p. 126, line 2 (from top), for "to broad entire" read "two broad entire".

verticalis (Certhia) 168.
 " (Cinnyris) 168, 253.
 " (Cossypha) 177, 253.
 " (Nectarinea) 168.
 vestita (Campothera) 220.
 vestitus (Cuscus) 94, 97.
 vetusta (Crotina) 123.
 Vidua 197, 254.
 vidua (Motacilla) 173, 253.
 viduata (Dendrocygna) 136, 248, 255.
 Vipera 139.
 viridana (Odontomyia) 61.
 " (Stratiomys) 61.
 vitticollis (Pelargoderus) 44.
 Viverra 270.
 viverrina (Phalangista) 22, 23, 24.
 vulgaris (Crocodilus) 138, 147.
 " (Lutra) 144.
 vulpecula (Didelphis) 21, 25, 28.
 " (Trichosurus) 25.
 vulpina (Didelphis) 25.
 " (Phalangista) 26, 28.

W.

Waldenia 157, 235, 253.

wicneckii (Eurycephalus) 128.
 wittei (Phalops) 20.
 woodfordi (Syrnium) 151.

X.

xanthopus (Phalangista) 25, 26, 27.
 Xenocichla 178, 179, 253.
 Xerus 139.
 Xylobuceo 216, 217.
 Xylocopa 54.
 Xylophagidae 70.

Z.

Zanclostomus 224.
 zebra (Antilope) 270, 271.
 " (Canis) 270.
 " (Cephalophorus) 270.
 " (Damalis) 270.
 " (Viverra) 270.
 zebrata (Antilope) 270.
 zonarius (Astur) 153.
 " (Micronisus) 153.
 Zonopterus 125, 127.
 zoraidae (Parastasia) 16.

1.



2.



3.



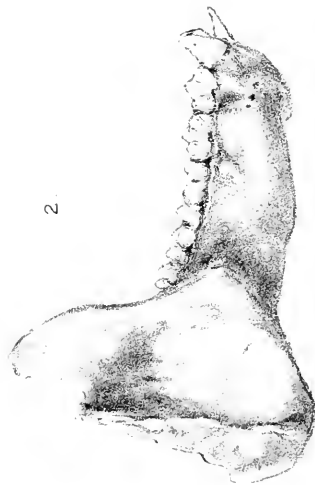
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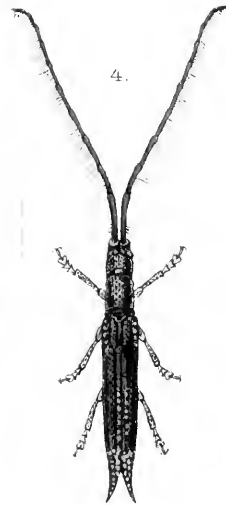
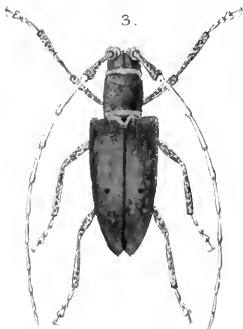
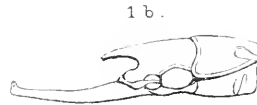
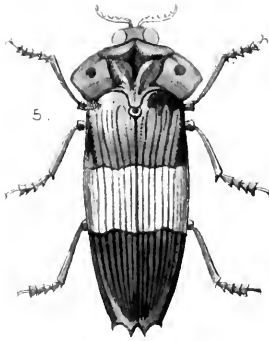
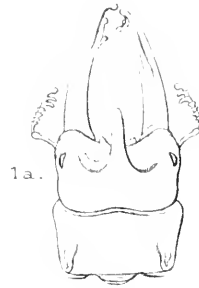
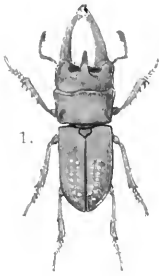


H. Verhulst, ad nat. del. et lith.

P. W. M. Trapman.

1, 2. HAPALEMUR SIMUS Gray. 3, 4. HAPALEMUR GRISEUS Geoffr.

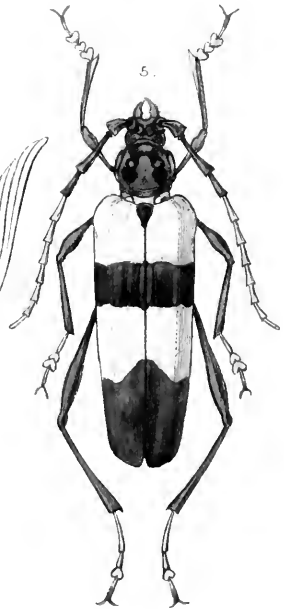
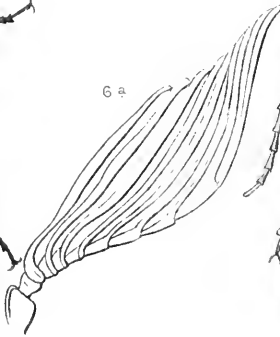
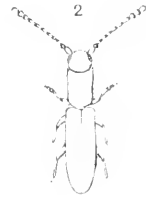
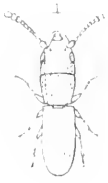




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1,1a,1b GNAPHALORYX PERFORATUS *Rits*. 2. ARGYRIPA SUBFASCIATA *Rits*.
 3. PELARGODERUS SEMITIGRINUS *Rits*. 4. TETRAGLEUES DIUROIDES *Rits*
 5. CALODEMA RIBBEI *v. d. Poll.*



W. H. S. P. H. N. L. M. 1885

PLATE 4

PLATE 4

1 LAEMOPHLOEUS INSULARIS Group

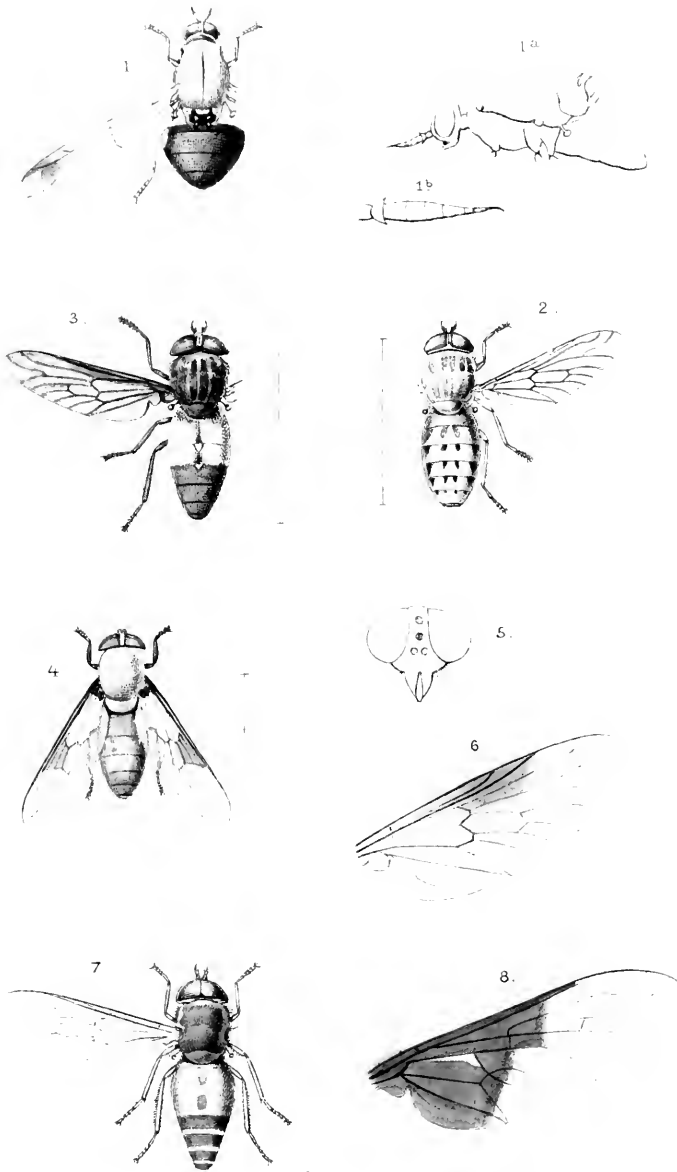
2 SILVARIUS JAVANICUS Group.

3, 3a, 3b NERITINA SUBOCELLATA Schepm.

4 PROTAETIA HAGENI Rits.

5. ZONOPTERUS SUSPECTUS Rits

6, 6a OXYNOPTERUS HARMSeni Caud.



1. 1a. 1b. CAENACANTHA BIPARTITA v.d.W.
 2. TABANUS MULTIPUNCTATUS v.d.W.
 3. TABANUS LEUCASPIS v.d.W.
 4. TABANUS ATRIPES v.d.W.
 5. TABANUS BIPUNCTATUS v.d.W.
 6. TABANUS EQUESTRIS v.d.W.
 7. TABANUS FELDERI v.d.W.
 8. ARGYRAMOEBA MELANIA v.d.W.

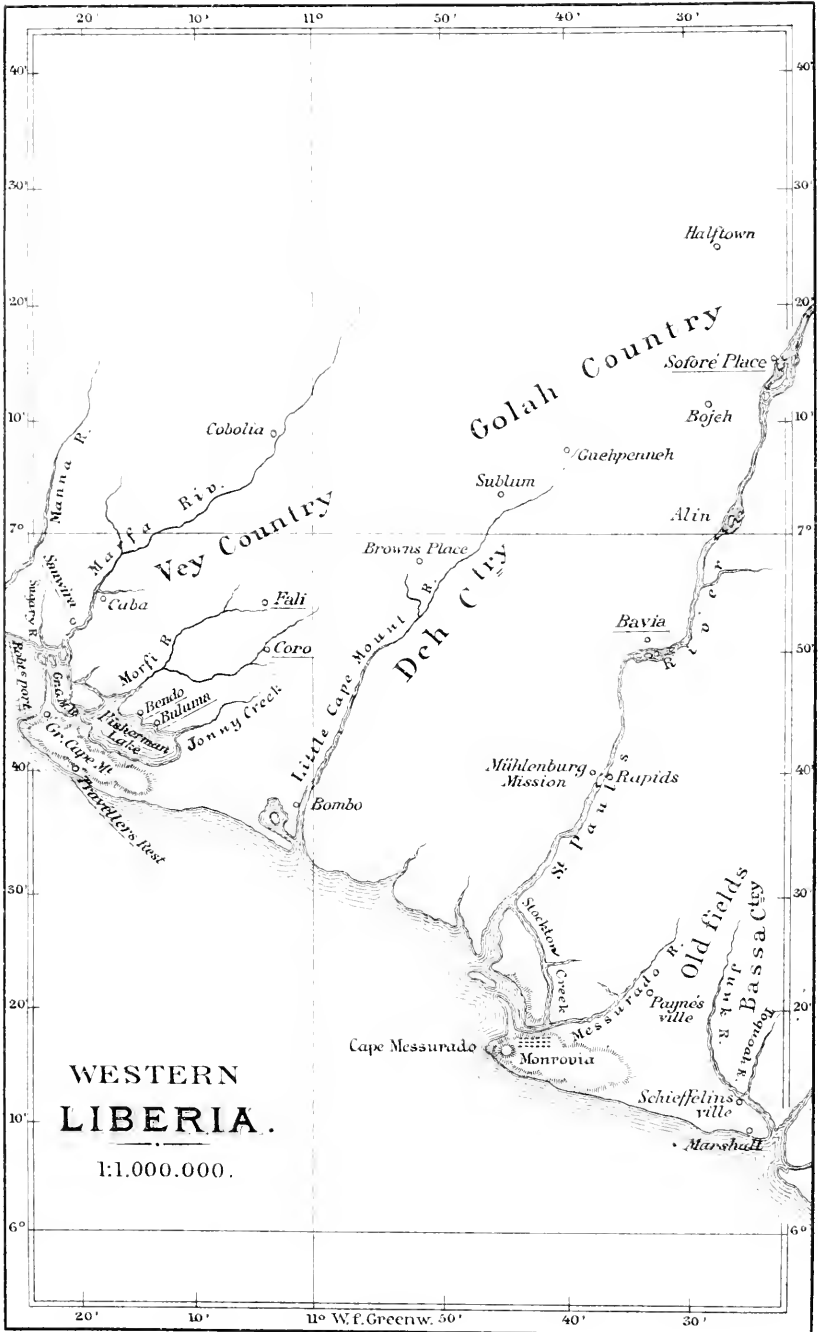


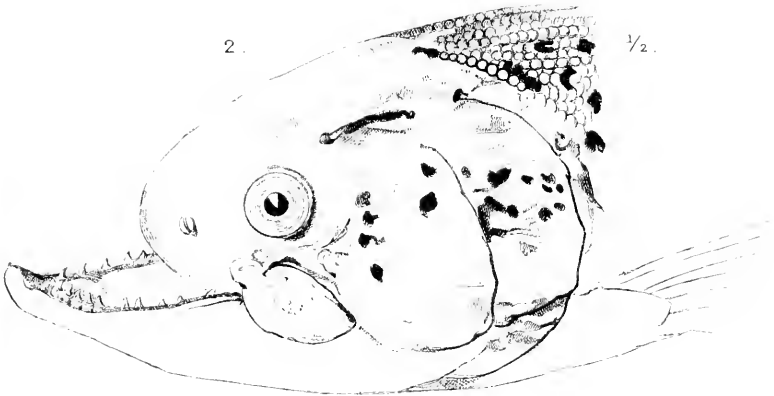
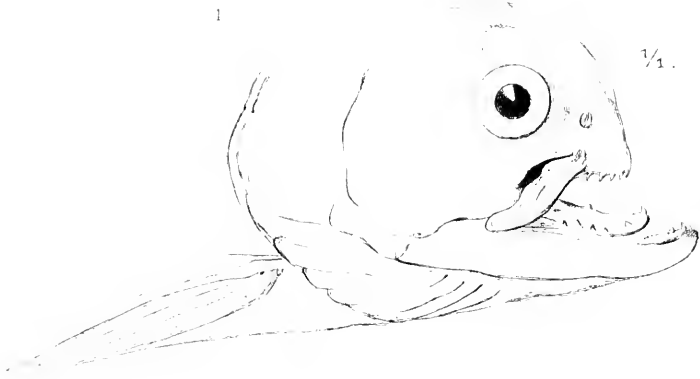
1/2.

H. Verint. ad nat. del. et lith.

COLUMBA UNICINCTA Class.

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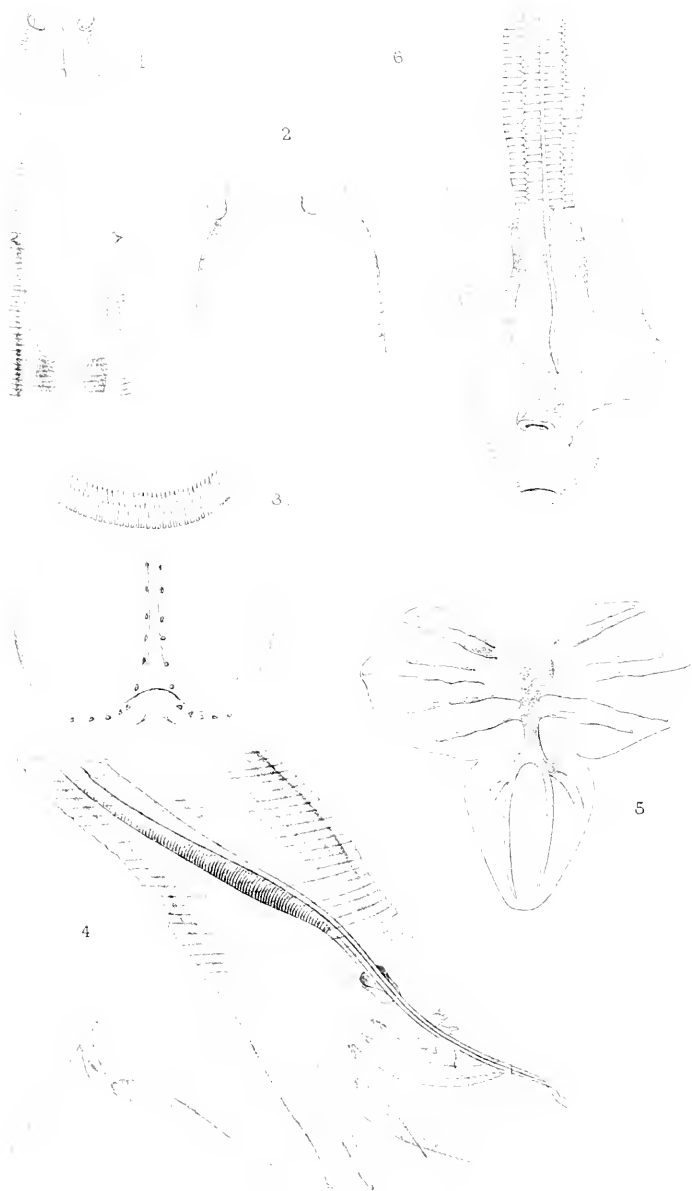




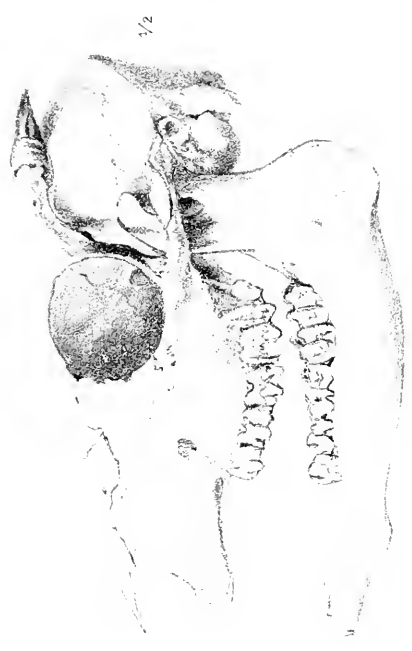
F. J. W.

F. J. W.

1. SALMO TRUTTA *Flem.*
2. SALMO SALAR *L.*



SCLEROSTOMA STRUTHIONIS *Harst.*



H. Verhulst del. et sculp.

PLATE 2.

ANTILOPE DORIA *Ogilbyi*.



N. L. M. 1885



3/10.

PLATE 10

P. W. M. Gray, del.

ANTILOPE LONGICEPS Gray.



7209

Mar. 6, 1885

NOTES

FROM THE

LEYDEN MUSEUM

EDITED

BY

Dr. F. A. JENTINK

Director of the Museum.

VOL. VII.

N^o. 1. January 1885.

LEYDEN

E. J. BRILL.

LIST OF CONTENTS.

PART I.—1885.

	Page
Note I. On exotic Diptera, by F. M. VAN DER WULP. Part 1 (concluded).	1.
Note II. Synonymical Remarks on Coleoptera, by C. RITSEMA Cz.	16.
Note III. Description de quatre espèces nouvelles de Coprophages appartenant au Musée de Leyde, par J. W. VAN LANSBERGE	17.
Note IV. On <i>Didelphis caudivolvula</i> Kerr and <i>Didelphis vulpecula</i> Kerr, by Dr. F. A. JENTINK	21.
Note V. Description of a new species of the Nitidulid genus <i>Platynema</i> Rits. (<i>Orthogramma</i> Murray, nec Guenée), by C. RITSEMA Cz.	29.
Note VI. A new species of the Buprestid genus <i>Calodema</i> , described by J. R. H. NEERVOORT VAN DE POLL (Plate 3, fig. 5)	31.
Note VII. On some rare and interesting Mammals, by Dr. F. A. JENTINK. (Plate 1 and 2)	33.
Note VIII. Four new species of exotic Coleoptera, described by C. RITSEMA Cz. (Plate 3, fig. 1—4)	39.
Note IX. Deux espèces nouvelles de Cœcujides des îles de la Sonde, décrites par ANT. GROUVELLE. (Plate 4, fig. 1 and 2)	47.
Note X. <i>Neritina (Clithou) subocellata</i> v. Martens, MS., described by M. M. SCHEPMAN. (Plate 4, fig. 3, 3 a and 3 b)	49.
Note XI. Description of a new genus of Bostrychidae, by the Rev. H. S. GORHAM	51.
Note XII. Remarks on Hymenoptera and Coleoptera, by C. RITSEMA Cz.	54.
Note XIII. Description d'une espèce nouvelle de Haliplides, par M. RÉGIMBART	55.
Note XIV. On exotic Diptera, by F. M. VAN DER WULP. Part 2. (Plate 5).	57.

N.B. Plate 3; 4 and 5 will be published in the April-number.

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LEYDEN
E. J. BRILL.

LIST OF CONTENTS.

PART II. 1885.

	Page
Note XIV. On exotic Diptera, by F. M. VAN DER WULP. Part 2. (Plate 5).	65.
Note XV. A monograph of the genus <i>Cuscus</i> , by Dr. F. A. JENTINK . . .	87.
Note XVI. Deux espèces nouvelles d'Elatérides, décrites par E. CANDÈZE (Plate 4, fig. 6 and 6a)	120.
Note XVII. Three new species of exotic Coleoptera, described by C. RITSEMA Cz. (Plate 4, fig. 4 and 5)	123.
Note XVIII. Remarks on Longicorn Coleoptera, by C. RITSEMA Cz. . .	128.
Note XIX. Zoological researches in Liberia. A list of Birds, collected by J. Büttikofer and C. F. Sala in Western Liberia, with biological observations, by J. BÜTTIKOFER (Plate 6 and 6a).	129.

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N.B. Plate 4 and 5 will be published in the July-number.

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NOTES

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LIST OF CONTENTS.

PART III.--1885.

	Page
Note XIX. Zoological researches in Liberia. A list of Birds, collected by J. Büttikofer and C. F. Sala in Western Liberia, with biological observations, by J. BÜTTIKOFER (Concluded)	161.
Note XX. A supplementary note on <i>Glareola megapoda</i> , by J. BÜTTIKOFER.	256.
Note XXI. A new species of the Coleopterous genus <i>Tritomidea</i> Motsch., described by the Rev. H. S. GORHAM	257.
Note XXII. On deformities of the head in <i>Salmonidae</i> , by Dr. TH. W. VAN LIDTH DE JEUDE (Plate 7)	259.
Note XXIII. Description d'une espèce nouvelle exotique du genre <i>Necrophorus</i> Fabr., par ANT. GROUVELLE.	262.
Note XXIV. A new Entozoon from <i>Struthio molybdophanes</i> Rehw., described by Dr. R. HORST (Plate 8)	263.

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NOTES

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N<sup>o</sup>. 4. October 1885.  
~~~~~

LEYDEN
E. J. BRILL.

LIST OF CONTENTS.

PART IV.--1885.

	Page
Note XXV. On two re-discovered Antelopes, by Dr. F. A. JENTINK. (Plate 9 and 10)	269.

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3 2044 106 277 544

