

B. *The alveolar surface of the upper and lower jaws with a short ridge on the hinder part of each side. Nasals truncated, straight. Peltastina.*

Gular plates short, separate.

Toes 4.5. Upper beak three-toothed. *Peltastes, Centrochelys.*

Toes 4.5. Upper beak rounded, toothless. *Chersinella.*

Toes 4.4. *Testudinella.*

Gular plates united, produced. *Chersina.*

C. *Alveolar surface of upper jaw narrow in front, triangular on the side, with a sharp edge on each side; of the lower jaw linear, narrow, with a sharp edge on each edge. Homopus.*

†† *Sternum: front lobe covered with gular, subgular, and pectoral plates, separated by a cross suture from the abdominal plates. Alveolar process of upper and lower jaw with a sharp outer edge. Pyxidina, Pyxis.*

II. *Hinder part of dorsal disk separated from the rest by a more or less perfect tranverse suture; alveolar surface narrower, of uniform width and a slightly raised edge on each side. Kinixyina, Kinixys.*

#### EXPLANATION OF PLATE LX.

- |                                  |  |
|----------------------------------|--|
| Fig. 1. <i>Xerobates gopher.</i> | } Alveolar processes of upper and lower jaw of each genus. |
| 2. <i>Asterochelys radiata.</i>  |  |
| 3. <i>Chelonoides tabulata.</i>  |  |
| 4. <i>Chersinella græca.</i>     |  |
| 5. <i>Homopus areolatus.</i>     |  |
| 6. <i>Chersina angulata.</i>     |  |
| 7. <i>Pyxis arachnoides.</i>     |  |
| 8. <i>Kinixys erosa.</i>         |  |

November 18, 1873.

Dr. Günther, F.R.S., V.P., in the Chair.

Mr. Sclater exhibited and pointed out the characters of two new species of birds obtained by Mr. Salmon during his recent expedition to the State of Antioquia, Columbia. These were

*CHLOROCHRYSA NITIDISSIMA*, sp. nov.

*Supra nitide viridis, tergo cærulescente; pileo antico, capitis lateribus et interscapulio flavis: macula auriculari utrinque nigra: alis caudaque nigris viridi limbatis: uropygii plumis paucis aurantiaco terminatis: subtus cærulescenti-viridis, ventre medio nigro, gutture toto aureo-flavo, hoc colore in collo in aurantiacum transeunte: rostro et pedibus nigris: long. tota 5, alæ 2·7, caudæ 1·75, poll. Angl. et dec.*



*Hab.* in statu Antioquia, reipubl. Columbianæ.

*Mus.* P. L. S.

*Obs.* Species habitu generali *C. callipareæ* et *C. phænicotis* prædita, sed rostro paulo fortiore, et facie aurea distinctissima.

GRALLARIA RUFICEPS, sp. nov.

*Supra brunneus, pileo toto et capitis lateribus ferrugineo-rufis: subtus cinerea, subalaribus et remigum pogoniis interioribus cervinis: rostro nigro, pedibus corylinis: long. tota 8, alæ 4.5, caudæ 2, tarsi 2.5.*

*Hab.* in statu Antioquia reipubl. Columbianæ.

*Mus.* P. L. S.

*Obs.* Species tarsis elongatis insignis, *Grallariæ nuchali* proxima, sed crassitie majore, pileo omnino rufo et ventre cinereo distinguenda.

Mr. Sclater exhibited a pair of horns of the new Bubaline Antelope from the Bogos country, lately named *Alcelaphus tora* by Dr. Gray\*, and remarked that it was evidently the same species as v. Heuglin had recognized as the "Bubal" (*Antilope bubalis*), as v. Heuglin had given the Amharic name of this species as "Tora" and stated that it inhabits the western slope of the Abyssinian tableland on the Barka and Atbara†.

Mr. J. E. Harting exhibited a curious variety of the common Partridge, which had been shot at Corbridge-on-Tyne in September last. The dark chesnut colour, which generally takes the form of a horse-shoe on the breast, was, in this specimen, diffused over the sides and flanks. The primaries, instead of being greyish brown with transverse bars of buff, were of a uniform pitch-brown colour; the back and wing-coverts of an almost uniform rich reddish brown, a few of the feathers only mesially streaked or tipped with buff. The bird had been sent to Mr. Harting as a hybrid between the Partridge and Red Grouse; but there was nothing except the remarkable coloration to justify such a supposition. The bill and tarsi were those of *Perdix*. There were stated to have been five or six birds similarly coloured in a covey of about twice that number.

The following extracts were read from a letter addressed to the Secretary by Mr. R. Swinhoe, F.Z.S., dated Chefoo, 25th August, 1873:—

"On the question as to what White Stork is found in China I have received the following note from Père Heude, of Si-Rae-Wei, Shanghai:—'Je suis parfaitement sûr d'avoir tiré à balle sur des Cigognes blanches à bec rouge. Elles sont communes et pêchent en troupes avec la Cigogne noire. Je n'ai pu les atteindre, parce que je n'avais pas le temps d'attendre à l'ambuscade: j'ai vu ces oiseaux en Alsace et les connais bien au moins quant au genre.'

\* 'Nature,' vol. viii. p. 364 (4th Sept. 1873).

† See Heuglin, 'Reise in d. Geb. d. Weissen Nil,' p. 319, and "Ant. u. Büff. N. O.-Afrika's," in Acta Acad. Leop.-Car. xxii. p. 21.



"From the above it would appear that I am wrong in supposing that the White Stork of China is the same as that of Japan, my new *Ciconia boyciana* (see *antea*, pp. 512, 513).

"I have also to state that *Pitta nympha*, figured in the 'Fauna Japonica' from a Japanese drawing, seems to be a reality. A live *Pitta* in a lark's cage was brought to me on the 13th August. It was said to be from this province, and had evidently been long in a cage, as the lower mandible of the bill had outgrown the upper, and the bird had all the appearance of a prisoner. It answers well to the description in the 'Fauna Japonica' of *Pitta nympha*, except that its chin is as white as the crescentic band on its throat.

"I was scarcely prepared for a *Pitta* so far north, and do not doubt now that a similar bird occurs in Corea. It wants the white crescent on its black axillaries, and seems to have its nearest ally in *P. oreas* of Formosa. It devours grasshoppers greedily, and has a wailing cry like that of a puppy dog in distress."

The following papers were read :—

1. Description of a Virgularian Actinozoon from Burrard's Inlet, British Columbia. By EDWARD L. MOSS, M.D., F.R.C.S.I., Surgeon in charge R.N. Hospital, Esquimalt.

[Received September 24, 1873\*.]

(Plate LXI.)

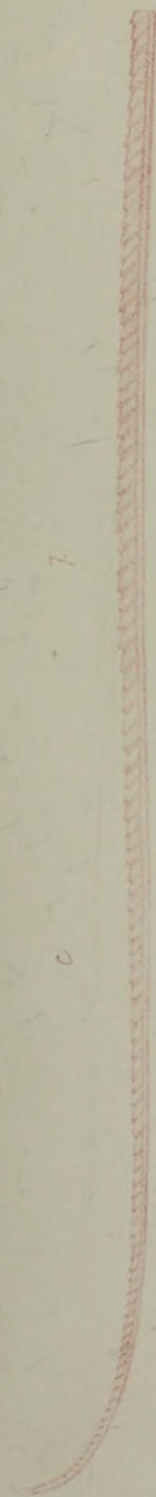
The men employed in the dog-fisheries at Burrard's Inlet, close to the northern mouth of the Frazer river, have from time to time captured a strange-looking animal in their nets. Its soft tissues did not admit of easy preservation; and consequently all sorts of stories were afloat as to the appearance of the animal in its fresh and perfect state; but its skeleton (a hard central axis, very like a peeled willow-wand, requiring no preparation beyond the removal of its gelatinous investments) has long been familiar to every one in the colony who took any interest in natural history; and occasional specimens have strayed through the States or round the Horn to the learned in such matters of England and Germany. In this way its skeleton has stood sponsor for the creature, and has, I am informed, received the provisional title of *Osteocella septentrionalis* from Dr. Gray, in Ann. & Mag. Nat. Hist. 1872, ix. p. 406†.

The specimen which I now have an opportunity of describing is one from a number *en route* to that gentleman from my friend Justice Crease, of Victoria, who has requested me to give him a description of its present appearance, in case the preservative fluid in which its brethren are forwarded should not prove capable of keeping them in a state fit for investigation at the end of their long journey home.

\* Communicated (together with a letter from Dr. Moss) by Dr. J. E. Gray, F.R.S.

† See also articles in 'Nature' for 1872, vol. vi. pp. 432, 436, & 516.—ED.





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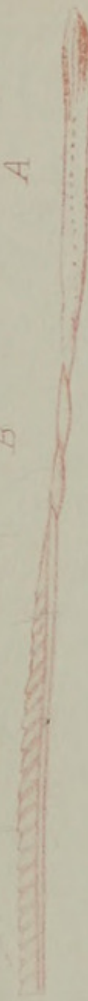


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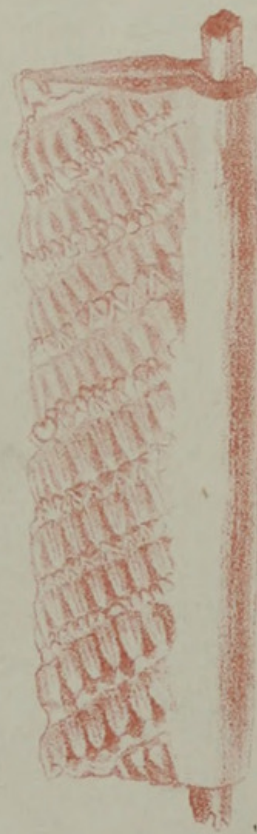


B

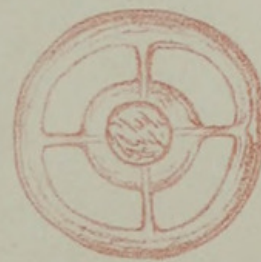
A



4



3



2



EL Moss. del.

NEW VIRGULARIAN ACTINOZOON.

J. Smit. lith







The specimen from which the following notes are made has indeed already suffered considerable post-mortem disintegration; its more delicate portions do not admit of the handling necessary for dissection under the microscope. Sufficient, however, remains to enable me to speak definitely as to its position in the animal kingdom, though the absence of means of reference in this colony makes complete accuracy unattainable.

The creature belongs to the Virgularian section of the family Pennatulidæ, but differs from those of its genus that I know of in that the lateral ridge-like processes bearing the polypes exist only on one side of the central axis; in short, to borrow a term from its fossil relatives the Graptolites, it is "monoprionian."

In this example the pale rosy chocolate tint, so common in its class, is still preserved; the entire actinosoma (Plate LXI. fig. 1) measures 8 feet 6 inches in length. The lower or proximal foot-length (A) is the thickest part; its diameter is a little over 1 inch; it is cylindrical; its end tapers rapidly to a soft cone perforated by a pore (fig. 2); and it is grooved externally by twenty-four longitudinal wrinkles. This lower foot-length consists of two cylinders of cartilaginous consistence, the inner, more transparent and firmer, closely enclosing the central hard rod or coral, the outer investing the former and attached to it only by four thin longitudinal septa (fig. 3), passing through the entire thickness of the inner cylinder, but very slightly attached to the central rod. The space included between the two concentric cylinders is thus divided into four equal chambers, ending below at the apex, and above gradually narrowed by the widening of the partitions till they finally disappear about 18 inches from the proximal extremity. A section of this part presents the wheel-like appearance shown in fig. 3.

Externally a line of minute pores marks the position of each septum; but I could not trace any connexion between them and the quadrate chambers.

The second foot-length of the actinosoma is much more slender (fig. 1, B); the sarcode closely invests the central axis and presents a twisted appearance. The four lines of pores are still visible externally; but the space between the layers of soft tissue is greatly reduced, and at the distal end of this length terminates altogether. At this part the two lines of pores on one half of the organism change their character; the openings, instead of being very minute and isolated, become larger, and a little further on begin to occur in rows of twos and threes. The fleshy parts here project more from the central axis on this side than on the other. At the end of another foot-length the pores have changed into little rows of pits on either side of a ridge of soft tissue, each pit filled with its polype; and from this part upwards the polype-bearing part of the cœnosarc (fig. 1, C) extends to a gracefully tapering extremity, but presents an unchanged plan of structure throughout. Taking a central part for example (fig. 4), we find the hard round axis of very much the same diameter as below, though above it tapers with the rest of the tissues till it ends in a fine point. It is very thinly covered by the two fleshy layers for about two thirds of its circumference (section, fig. 5);



but its remaining third supports the edge of an expansion of the softer tissues in much the same way in which the ridge on the back of a scythe supports the blade. The two sides of this expansion bear lines of polypes rank over rank in *échelon* formation, caused by the rows sloping diagonally upwards and outwards, an arrangement which would prevent the mouths of the polypes being turned away from a current of water which, if the lower end of the actinosoma were embedded in sand, would bend its slender stem as the wind bends grass.

The polypes themselves are not independent of their cells, are flask-shaped (fig. 6), and about  $\frac{1}{4}$  inch in length; their eight-rayed summits retractable into the little transparent collars of ectoderm surrounding them, and their bases filled with salmon-coloured ova lying in pits on either side of the gristly blade of endoderm which supports the polypes and the tissues that form them, and is itself supported at its edge by the central rod. The polypes are striped by eight lines of mesentery, clearly defined by dark crimson (probably spermatie) granules lying between them. On making a transverse section (fig. 5) the relation of the two fleshy coats to each other and to the coral becomes more evident. Two small longitudinal canals lie on either side of the median cartilaginous blade close to where it divides to enclose the axis. The whole of this cartilaginous tissue is traversed by minute whitish canaliculi, but is otherwise transparent and untinted by the reddish colour which pervades the outer sarcode. The latter layer contains no spicules; but its surface is dotted at irregular intervals by oval white cells (articulating organs, I presume, though the softened state of the specimen prevents me making certain of their character).

Both the minute structure and general habits of this Sea-pen must remain conjectural till an observer can study it alive in its native sea. The fishermen say it swims free, and is so caught in their nets; but though the absence of any fractured actinorhiza makes it probable that it can do so, yet the twists in the narrow part of the organism, just before the polype-bearing portion begins, and the arrangement by which the root portion might, by the dilatation of its chambers, act as an anchor, seem to indicate a fixed habit, which is made further probable by the fact that the creatures are always captured in certain places, and have never been met with in the open sea.

The common but very improbable statement that this actinozoon is confined to Burrard's Inlet is altogether premature, as the infratidal region of this coast is almost altogether zoologically unknown.

#### DESCRIPTION OF PLATE LXI.

- Fig. 1. Complete actinosoma, much reduced: A, root; B, neck; C, polype-bearing portions.
2. Proximal extremity, natural size.
  3. Section 6 inches from proximal extremity, natural size.
  4. Central portion from polype-bearing part of actinosoma, natural size.
  5. Section of central polype-bearing portion, natural size.
  6. Polype, magnified 3 diameters.









J.G. Keulemans. lith.

M & N Hanhart. imp.

LAMPROLIA VICTORIÆ.



2. On *Lamprolia victoriæ*, a most remarkable new Passerine Bird from the Feejee Islands. By OTTO FINSCH, Ph.D., C.M.Z.S., Curator to the Bremen Museum.

[Received September 25, 1873.]

(Plate LXII.)

For the pleasure of introducing this curious and interesting little bird to science I am indebted to Mr. T. Klinesmith, of Levuka, Ovalou, Feejee Islands, who forwarded to me a pair, along with the beautiful and most extraordinary *Chrysæna victor*\*, Gould, through the kindness of Mr. Michelsen, of Hamburg. At first sight the bird immediately proves to be new—not only as a species but also as a type of new genus, which I propose to call

LAMPROLIA†, nov. gen.

*Diagn. gen.* Bill and feet as in *Saxicola*, but the nostrils covered partly by the frontal feathers; wings long and rounded, with very short projecting point of primaries, as in *Thamnobia*; tail short, rounded; mode of coloration Paradiseine.

*Bill* (fig. 1) moderate, straight, slender, at base broader than high; culmen subcarinated, slightly curved, and the sides gradually compressed to the tip, which is slightly emarginated; the gape furnished with a few short bristles.

*Nostrils* basal, lateral; the opening oblong, without membrane, and partly covered by the brush-like erectile frontal feathers.

*Wings* (fig. 3) long, rounded, reaching beyond the middle of the tail; first primary moderately short, a little longer than half of the

\* I beg leave to remark that Dr. Gräffe (as already stated, P. Z. S. 1871, p. 643) was the first who mentioned the existence of this conspicuously coloured Dove, saying (Journ. für Ornith. 1870, p. 418): "In Lanthalu, einer Insel nahe bei Taviuni, kommt eine höchst eigenthümliche *Chrysæna*-Art mit ganz mennigerothem Gefieder vor, von welcher ich ein Exemplar, in einem Käfig gehalten, in Levuka sah, aber leider nicht erhalten konnte, da es der Liebling einer englischen Dame war." Dr. Gräffe's "Lanthalu" seems to be synonymous with the small island east of Oamea named "Laucala" on Stieler's 'Hand-Atlas' (No. 51), and very close to the isle of Vuna, or Taviuni, from which my specimens were obtained. These were labelled, in the collector's handwriting, "Waup Doves; top of mountains, Taviuni: feed on berries."

As regards the generic position of this singular Dove I may add that it is undoubtedly a member of the genus *Chrysæna*, which, as we (Finsch & Hartl. Ornith. Central-Polyn. p. 134, note) have already shown, is distinguishable from *Ptilinopus*, not merely by the peculiar and unique structure of the feathers in *Chr. luteovirens*, but chiefly in having no shortened and narrowly pointed first quill, which is so characteristic of the genus *Ptilinopus*. *Chr. victor*, as well as the *Chr. luteovirens*, has the first primary long, without emargination, and equal to the seventh, a short tail which is covered by the elongated tail-coverts; and the tarsi are not feathered to the toes as in *Ptilinopus*, but only at its base. Although *Chr. victor* does show the extraordinary structure of feathers seen in *Chr. luteovirens*, its plumage exhibits also a singular structure in respect of the length and laxity of the radii, which resemble mostly those in the genus *Coryllis* (*Loriculus*).

† From λαμπρός, *splendidus*, and λαῖος, *lævis*.



second, which is shortened and nearly equal to the eighth; fourth and fifth quills equal and longest, third scarcely shorter; projecting point of primaries very short; quills, especially the secondaries, very broad, with rounded tips; ten primaries and nine secondaries.

Fig.1.

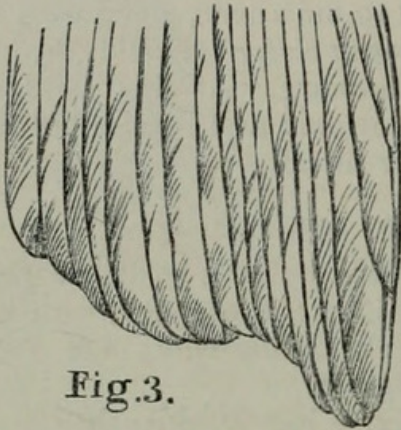


Fig.3.

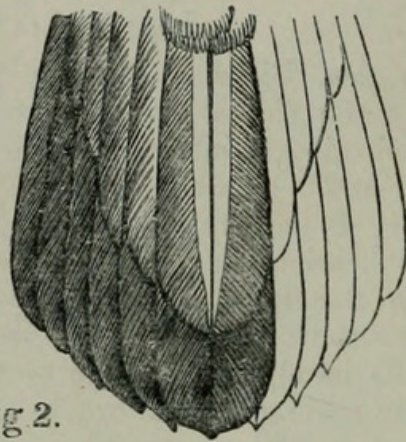


Fig 2.

Head, wing, and tail of *Lamprolia victoriæ*.

*Tail* (fig. 2) short, broad, and moderately rounded, with twelve feathers, which at the end are broad, rounded, subtruncate, and exhibit a singular concavity.

*Tarsi* long, slender, and covered by a single scale in front (caligated), with the inner toe shorter than the outer toe, which is united at its base with the middle toe; the hind toe long, nearly equal to the middle toe, and armed with a strong curved claw.

I scarcely remember a bird which has puzzled me in respect of its generic position so much as this curious little creature. At first glance it reminds one of a Paradiseine bird by the luxuriance of its coloration and the extraordinary structure of its plumage. The feathers on the back show the singular velvet-black observed in the genus *Ptilorhis*, whereas the shining steel-blue tips of the feathers on the head and neck, in their scale-like appearance, resemble those of *Manucodia*. Quite singular are the tail-feathers as regards the loose and separated disposition of their radii, and the splendid shining silky white coloration which they show on their basal portions, like the rump and upper tail-coverts. After a careful examination I come to the conclusion that this new form ranges nearest to *Pen-*



*tholæa*, Cab. (type *Saxicola albifrons*, Rüpp.), of the subfamily Saxicolinæ. I may add that, according to my view, *Thamnobia*, Sw. (type *Motacilla fulicata*, L.), is scarcely separable from *Pentholæa*. Amongst Australian and Polynesian genera *Petroica* is the nearest ally, but easily distinguished by its long wings, with the very prominent point of the primaries, and by its long tail.

LAMPROLIA VICTORIÆ, Finsch, sp. nov. (Plate LXII.)

*Diagn.* Jet-black; feathers on head and neck tipped, scale-like, with shining steel-blue; rump, upper tail-coverts, and tail partly silky white.

*Descr. av. ad.* Jet-black; mantle and shoulders velvet-black, the same as the outer webs of the secondaries, which latter in certain lights exhibit a purplish gloss; the feathers on the head, sides of head and neck, on the chin and throat, as well as the smallest wing-coverts along the cubitus, tipped with oblong apical spots of a rich shining steel-blue, which in certain lights changes into glossy green; feathers on the occiput, nape, and hind neck show the same structure, but the apical tips are glossy purplish violet, changing into steel-blue or green; lores deep jet-black; rump and upper tail-coverts shining silky white, the same as the two middle tail-feathers, which are broadly tipped with black, glossed strongly with purplish violet; the remaining tail-feathers black, and only on the outer web shining silky white, which on the outer feathers is more restricted, showing a gradually broader black apical portion; the outermost tail-feather uniform black; bill and feet black.

Total length. centims.	Wing. millims.	Tail. millims.	Outmost feather. millims.	Bill from front. millims.	Bill from gape. millims.	Tarsus. millims.	Middle toe. millims.
c. 14	85	45	38	12	19	23	12
—	78	45	40	12	19	23	14

The specimen from which the above description was taken is undoubtedly an old bird in full dress, and apparently a male; the second specimen agrees in every respect, except that the wings are a little shorter and the point of bill shows scarcely any emargination; it may perhaps be a female. This new bird is a native of the yet unexplored island of Vuna, or Taviuni, of the Feejee group, which, separated only by the Somo-Somo passage, lies a few miles east of the south-east point of Vanua-Levu, one of the main islands of that group. A collector's note says, "The small black bird, native name '*Kaya*,' from top of mountains, Taviuni, has the habits of a perching bird or Robin; eyes dark brown."

I have great pleasure in naming this most remarkable and brilliant new species *Lamprolia victoriæ*, in honour of Her Imperial and Royal Highness Victoria, Crown-Princess of the German Empire and of Prussia.



3. Descriptions of two new Species of Butterflies from the Andaman Islands. By W. S. ATKINSON, M.A., F.L.S., &c.

[Received September 29, 1873.]

(Plate LXIII.)

1. *PAPILIO MAYO*, n. sp. (Plate LXIII. fig. 1.)

Black, exterior fringes of the wings white between the extremities of the nervures. The hind wings dentate, crossed *above* by a broad band of bright azure-blue, divided by the black nervures; *below* the azure band reduced to a series of blue lunules, tinged with red, terminating at the anal angle in a blind eye-like spot surmounted by a red lunule; beneath this at some distance another red lunule placed convexly to the spot. The base of wing marked with some red blotches.

Expanse of wings 5 to  $5\frac{1}{2}$  inches.

*Hab.* Andaman Islands.

Named in memory of the late Earl of Mayo, Viceroy of India, who was assassinated at Port Blair in the Andamans on the 8th of February, 1872.

2. *EUPLOEA ANDAMANENSIS*, n. sp. (Plate LXIII. fig. 2.)

Pale fuliginous with white spots. Fore wing with a white spot between the extremity of the cell and the costa; another within the cell near its extremity; two others below the cell, one between the first and second, the other between the second and third median nervules; beyond these a curved series of nine white spots from the anterior margin to below the exterior angle, of which the three last are the largest; followed by a submarginal series of smaller elongated spots, extending from the first discoidal nervule to the exterior angle. The interior margin much rounded in the male, in which sex there is a single vitta of dark adpressed scales between the lowest median nervule and the submedian nervure. In the female the vitta is replaced by a white streak. Hind wing with two somewhat irregular series of elongated white spots, corresponding to the two series in the fore wing.

Expanse of wings  $3\frac{1}{8}$  to  $3\frac{5}{8}$  inches.

*Hab.* Andaman Islands.

4. Notes on Entozoa.—Part I. By T. SPENCER COBBOLD, M.D., F.R.S., F.L.S., Professor in the Royal Veterinary College.

[Read October 10, 1873.]

(Plate LXIV.)

The present communication is the first of a series of papers in which I propose to bring together many scattered observations made from time to time in the intervals of more sustained scientific work. Of necessity these notes will exhibit an incomplete and fragmentary





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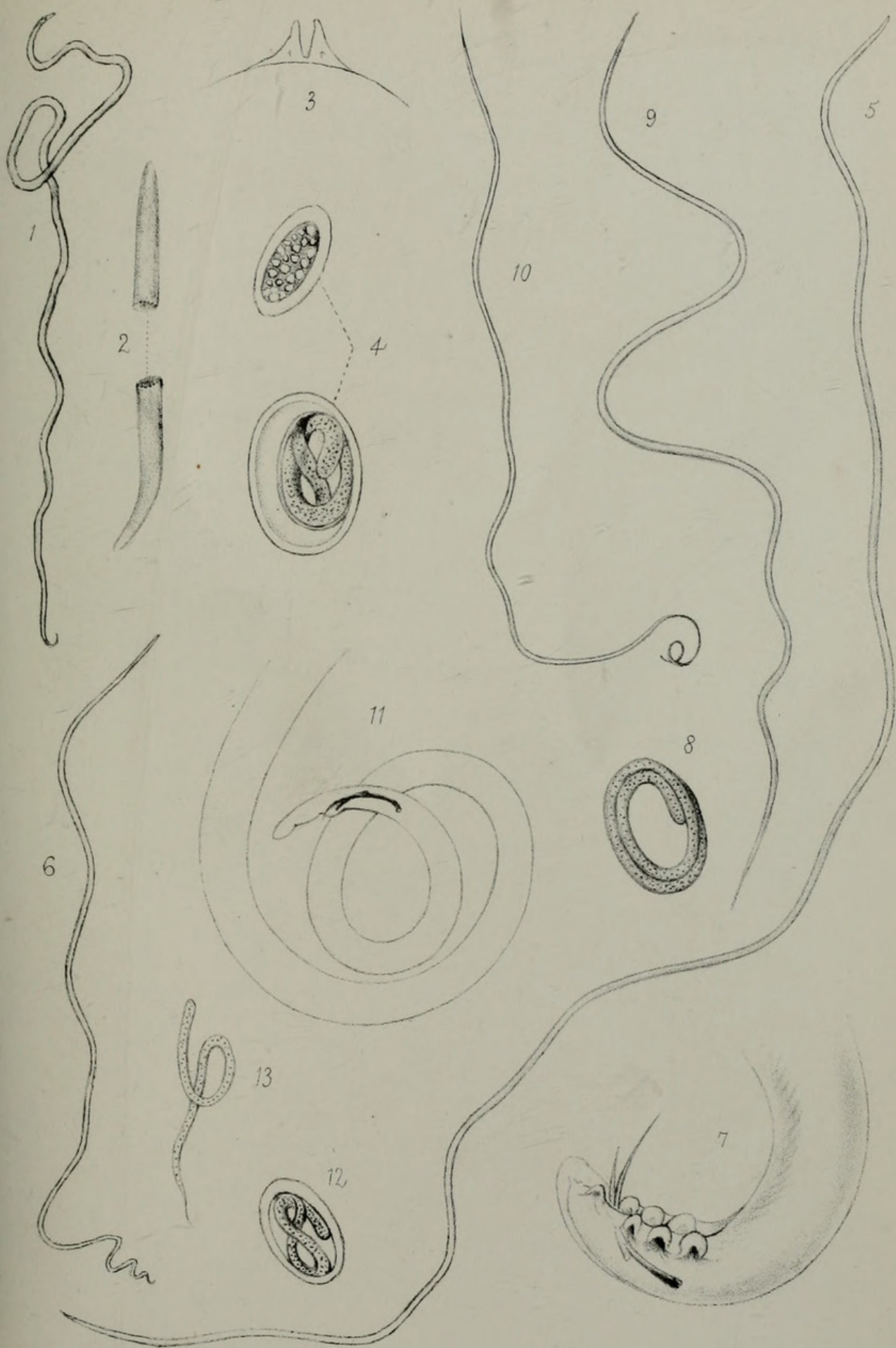


1









T.S.C del.

M&N.Hartart imp







character; but I have felt that it were better they should be presented in this form rather than remain altogether unemployed. The Society is aware that I am indebted to several of its Fellows, as well as to many other persons, for contributions of Entozoa; and I therefore embrace this opportunity of explaining that it has hitherto been quite impossible for me to do justice to these various gifts. In individual instances, as, for example, in the case of the Nematodes obtained by Prof. Flower from the Aard Wolf, I have made a single species of parasite the subject of lengthened comment (Zool. Soc. Proc. 1870); but to do so in all future and similar cases would require more undivided time and attention than is again likely to be at my disposal; moreover, in the majority of single and separate contributions the parasite rarely demands more than a passing remark serving to confirm, to verify, or it may be to refute statements made in some previous record.

The classification of the Entozoa is confessedly in a very unsatisfactory state; and I regret to observe that the more extended one's examinations become, the greater are the difficulties which one has to encounter in this respect. The geographical distribution of the Entozoa is a subject of increasing importance; and it is one towards the elucidation of which I conceive that such notes as these may eventually help to contribute their quota. It would be a work of supererogation to express the sum of my indebtedness by mentioning *seriatim* the names of all my friendly contributors, most of whom have transmitted solitary specimens. However, in the case of sets of specimens or collections, small and great, my acknowledgments are especially due to Mr. Charles Darwin, F.R.S., to Mr. Charles W. Devis, to Mr. Robert Swinhoe, H.M.B. Consul at Chefoo, to the late Dr. William C. Peckey, who brought me an interesting series of Helminths from India, and to Prof. Murie, M.D., formerly Prosector to this Society. Lastly, in these prefatory remarks, it is only necessary to add further that in this serial record no particular order of description will be observed beyond that which a mere general group-affinity may occasionally suggest as natural, convenient, or suitable.

#### 1. FILARIA HORRIDA (Diesing).

The first number and private reference on the list of a series of parasites which I received from Mr. Darwin in August 1869 refers to a set of worms obtained by him "from the stomach of an American Ostrich at Bahia Blanca, North Patagonia, in 1832." Having already identified a similar series of Nematodes that had long lain concealed in the Museum stores of the Hunterian Collection, I had no difficulty in recognizing the species. There were, in all, ten specimens—seven females and three males. The latter were in good condition, and varied in length from 5 to  $5\frac{1}{2}$  inches. Five of the seven females were perfect, the shortest measuring 20 inches, and the longest 29 inches, this latter worm having a breadth of exactly  $\frac{1}{8}$  inch. I may mention that one of the Hunterian specimens measured 35 inches; but examples have been referred to as extending



beyond 3 feet. I believe this entozoon was first described anatomically by Prof. Owen, from the College specimens above mentioned; but the only original remarks on the subject that I have seen from his pen are some few contained in the article "Entozoa" in Dr. Todd's 'Cyclopædia of Anatomy,' and others given in his 'Lectures on Comparative Anatomy.' From the published dates of these contributions (1839 and 1843 respectively), I am led to conclude that the first discovery of this worm actually rests with Mr. Darwin, since the late M. Diesing's specific description and nomenclature was evidently based on an examination of specimens obtained by Natterer in Brazil, the date of which would probably be about 1833, or perhaps a year later. However, as Natterer was many years previously resident in Brazil, and no special date of his particular "find" is given by Diesing, it is impossible for me to speak with certainty on this point. It is perhaps of little moment; and under any circumstances the systematist's specific title must be allowed to stand.

My examination of the females confirms Prof. Owen's statement respecting the simple character of the uterine organ and the forward position of the reproductive outlet. To be precise, I find that the vulva is placed  $\frac{1}{25}$  inch below the points of the labial papillæ. Of these papillæ I think there are ten or twelve, two of which project conspicuously beyond the rest, forming, as Diesing well observed, conical spines. Their length from base to apex is scarcely more than  $\frac{1}{250}$  inch; but their appearance suggests a structural affinity with the similar oral spines occurring in the Guinea-worm. In *Dracunculus*, however, according to Bastian, the two large spines are placed before and behind the mouth, not laterally.

This parasite from the Ostrich does not reproduce viviparously; at least there were no free embryos in the uterine duct. The eggs were chiefly of two sizes, those in which yolk-segmentation was going on measuring  $\frac{1}{750}$  inch in length, whilst the perfectly mature ova, containing coiled embryos, gave an average of  $\frac{1}{450}$  inch, being at the same time proportionally broader than the smaller eggs, whose transverse diameter was not more than  $\frac{1}{1000}$  inch.

As this worm has probably never been figured, I append a representation of the male (Plate LXIV. fig. 1), also an outline of the head and tail of the female (fig. 2), of the natural size, with a separate outline of the oral spines of the latter magnified sixty diameters (fig. 3). I likewise represent the egg in two stages of growth (fig. 4). Lastly, I may remark that this worm has not hitherto been recorded from the cavity of the stomach. That on this particular point there is no error in Mr. Darwin's MS., I think highly probable, not only from the distinguished collector's known accuracy, but from the circumstance that the parasites were so much coiled round one another that it took me nearly half an hour to unravel and separate them. I further presume that the tangled state was the condition in which they were originally found in the bird's stomach.

## 2. FILARIA IMMITIS, Leidy.

During the autumn of 1869 I received from Mr. Swinhoe the heart



of a dog, the animal, according to the statements of the donor, having died at Shanghai in the spring of the year, "after three days of great suffering."

During the month of February 1872 I also received, through Mr. Walsh, a second preparation of the heart of a dog which had died at Yokohama, Japan, under similar circumstances. This second specimen was transmitted by Mr. Dare, together with a communication which was published in the pages of the 'The Field' for February 24, 1872.

In both cases the *Filaria immitis* appears to have been the sole cause of the death of the dogs in question, the ventricles and auricles being completely blocked by the presence of a large number of these worms.

To Prof. Bennett of Edinburgh I am also indebted for a single specimen taken from another Chinese dog, the original preparation of the heart, as I saw it in 1850, resembling in all respects the specimens which I have now in my possession.

As, in my recently published 'Manual of the internal Parasites of our domesticated Animals,' I have already enlarged upon the symptoms produced by this parasite, and upon other practical points gathered from the statements of Mr. Dare, Dr. Lamprey, and others, I am here only concerned to add such scientific details as could not be published at any length in that small treatise.

In the interval which elapsed since the transmission of Mr. Swinhoe's contributions similar specimens of the worm were received at Netley and at the British Museum from Dr. Jones Lamprey. In the first instance they were briefly and very inadequately noticed by the late Dr. Baird in a paper communicated to the Linnean Society (May 2nd, 1867); but they have since supplied materials for the publication of an admirable paper by Assistant Prof. Welch of Netley ('Lancet,' March 8, 1873).

Although Mr. Welch's paper leaves little to be desired in reference to the facts of embryonal development, as far as can be gathered by an examination of the uterine contents of the female worm, yet there are some points well worth verifying in this matter; and there are others in connexion with the structure of the adult worm which appear to have escaped Mr. Welch's attention as well as Dr. Baird's. Unfortunately, I have had no opportunity of consulting the original paper by Dr. Joseph Leidy. As regards the specific name, for which, I believe, Dr. Leidy is responsible, nothing could be more to the point, as the term *immitis* expresses, metaphorically, the truly cruel character of the Entozoon.

Most of the following data have been gathered from an examination of the specimens supplied by Mr. Swinhoe, to whom I owe an apology for not having made an earlier record of the results. However, the dog's heart was exhibited at the Liverpool Meeting of the British Association in 1870; and a brief notice of it subsequently appeared in the published Reports of the Meeting for that year. It is the more incumbent upon me not to delay the publication of these few microscopic details, since Mr. Swinhoe, in a recent letter, informs



me that Dr. Little, of Shanghai, is diligently engaged in working out the structure and development of the parasite.

Dr. Krabbe, of Copenhagen, has likewise supplied some interesting particulars; but, in the absence of any references, I am led to conclude that the Danish author's observations are based on the previously published statements of Prof. Leidy ("Husdyrenes Indvoldsorme," Tidsskrift for Vet. 2den Række, ii. 1872).

On the the 15th of April last I examined a number of these worms, two of which, male and female, are represented in the accompanying Plate. To the naked eye the sexual differences are readily discernible. The female (fig. 5) maintains almost throughout a uniform calibre of about  $\frac{1}{25}$  inch; but at the head it diminishes to  $\frac{1}{50}$  inch, and at the tail to about  $\frac{1}{100}$  inch, the caudal point being bluntly convex. The oviducts of all the females examined were crowded with eggs, and in certain situations the eggs were collected together in the form of large ovoid masses. The largest eggs had a long diameter of  $\frac{1}{850}$  inch, with an average breadth of  $\frac{1}{1400}$  inch. These contained coiled embryos; the diameter of their bodies varying from  $\frac{1}{4000}$  inch to  $\frac{1}{3500}$  inch.

The male parasite is readily recognized by its comparatively slender body, having a diameter of about  $\frac{1}{30}$  inch, and also by its elegant spirally curved tail, which is three or four times twisted upon itself with the regularity of a corkscrew (fig. 6). The coiled portion is much narrower than the body of the worm, and it finally dwindles down to a breadth of  $\frac{1}{300}$  inch, its extreme point being blunt, as in the female. Within a short distance of the extremity the two spicules, of unequal length, may often be seen projecting from the cloacal outlet, this part of the worm being also furnished with a well-marked horseshoe-shaped bursa (fig. 7). This organ may be described as consisting of two transparent folds or extensions of the cuticle, each lateral division of the hood being supported by four oval glandular rays. The rays are apparently eight in number, and arranged in pairs. The uppermost pair is the largest, the other pairs gradually decreasing in size from above downwards. When viewed laterally, these oval rays present a beaded appearance, collectively forming a rather striking microscopic object. The diameter of the largest ray is only about the  $\frac{1}{1000}$  inch, whilst that of the smallest is not more than  $\frac{1}{1600}$  inch from side to side\*.

As seen in the drawing, the epidermal layer of the skin was generally found projecting more or less beyond the limit of the dermis. I regarded this as a *post mortem* production. In one case

\* Since this paper was read to the Society my attention has been called to a much more detailed description of the worm by Mr. Welch, of Netley, communicated to the 'Monthly Microscopical Journal' for October 1873, p. 157. The author gives many particulars that have escaped my notice, and he also interprets some of the facts observed by us both in a very different sense from that I have adopted. He recognizes but one *spiculum*, and regards the oval rays as generative appendages, of the nature of *vesiculæ seminales*, communicating with the seminal duct. He observed twelve of these oval appendages, and, amongst other things, describes the intestinal tube as terminating in a blind cæcal extremity.—T. S. C.



I obtained very satisfactory evidence of the existence of a minute terminal papilla, whose breadth scarcely exceeded the  $\frac{1}{8000}$  inch. I have no doubt that this papilla is connected with a caudal gland ; but I could not obtain a clear definition of the parts beneath the true skin. Lastly, I may add that immediately above the bursa I noticed a series of lines obliquely directed upwards, representing as many parallel foldings of the integument. The general character of these markings in all respects corresponded with the similar appearances figured and described by Eberth in *Enoplus*, *Enchelidium*, and other nematode genera.

### 3. FILARIA HEBETATA, sp. nov.

In the month of July of the present year I received from Mr. Millen Coughtrey (then acting as Demonstrator of Anatomy in the Liverpool School of Medicine) the heart of a Seal, together with a communication, from which I further learn that Mr. Coughtrey was himself indebted to Mr. T. J. Moore, the well-known Curator of Sir William Brown's Museum, for the opportunity of dissecting the animal in question. Mr. Coughtrey remarks that the Seal was an adult male example of *Stenmatopus cristatus*, or Hoodcap, the occurrence of which is very rare on the British coasts. The animal was captured in February at Frodsham, on the Cheshire side of the Mersey, and died at Widnes in the beginning of June, having been exhibited in the county during the interval. Mr. Coughtrey adds :—“I made a hurried, but careful *post mortem* examination, since it was suspected that it had died of poison. The dissection embraced every organ except the brain and spinal cord. The abdominal viscera were free from cysts or any appearance of worms. Within the stomach were three mackerel, in different stages of digestion. On removing the tongue and pharynx, with the larynx and trachea, I perceived a nematoid worm grasped by the *rima glottidis*, one half of it being within the posterior buccal orifice, and the other half within the larynx. I am sorry to say it was afterwards lost, through the carelessness of an attendant. The worm was about four inches in length, much thicker than those in the heart, and of a dusky hue. The thoracic viscera were removed *en masse*, when the lungs were found studded throughout with miliary tubercle. The worms were chiefly in the right ventricle of the heart, entwined and laced amongst the *columnæ carneæ*, being embedded and surrounded by blood-clot. The left side of the heart was quite free from worms ; and there were none in the pulmonary artery or other large vessels. When fresh the worms were extremely elastic, so that they might be stretched to half their length beyond the natural size and yet would not break. The muscular system generally was healthy. I have sent you all the worms except two, which I preserved, and afterwards gave to a friend.”

In offering this abstract of Mr. Coughtrey's lengthened and interesting account of his examination, I have purposely selected only such remarks as seemed to bear more or less upon the question of parasitism ; and in doing so I have adhered very closely to the actual



wording of his communication. Mr. Coughtrey has since left Liverpool for New Zealand, whence, in due time, I hope to receive from him further entozoal contributions. The nematode from the larynx was probably an example of *Ascaris osculata*; but the Hæmatozoa from the heart are, I believe, new to science. I have named the species as above, the specific title chosen having reference to the blunted extremity of the tail. In brief, the characters may therefore stand as follows:—Body of nearly uniform thickness, narrowing slowly in front and behind; head simple in both sexes, semi-circular in profile; tail of the female straight, rather suddenly narrowing to a fine rounded point; tail of the male spirally curved, furnished with two unequal spicules, blunt at the tip, where it forms a small knob. Length of the female 6 inches; male, up to 4 inches.

In addition to the above diagnosis, I may add that the head of the female suddenly curves forward from a point where it measures about  $\frac{1}{80}$  inch transversely, whilst the tail, at a corresponding distance from the extremity, does not exceed the  $\frac{1}{180}$  inch in diameter. The knob-like projection at the end of the tail of the male measures only  $\frac{1}{250}$  inch in breadth. As usual, in similar cases, I found the uterine ducts crowded with ova in various degrees of development, all of the most advanced embryos being included in a delicate chorionic envelope. The position of the vulva could not be made out; but the embryos (figs. 12 & 13) were taken from the oviduct at a distance of one inch from the head. The long diameter of the ova gave an average of  $\frac{1}{750}$  inch, the embryos having a length of  $\frac{1}{90}$  inch, or thereabout, the greatest breadth scarcely exceeding that of the human red blood-corpuscle.

#### EXPLANATION OF PLATE LXIV.

- Fig. 1. *Filaria horrida*, male: nat. size.  
 2. The same, female: head and tail, nat. size.  
 3. The same: outline of the oral spines, enlarged.  
 4. Ova of the same, highly magnified.  
 5. *Filaria immitis*: female, nat. size.  
 6. The same: male, nat. size.  
 7. The same: tail of the male, enlarged.  
 8. Ovum of the same: mag. about 500 diam.  
 9. *Filaria hebetata*: female, nat. size.  
 10. The same: male, nat. size.  
 11. Tail of the same: male, enlarged.  
 12. Ovum of the same: mag. about 350 diam.  
 13. Embryo of the same, set free.

#### 5. Description of a new Bird of Paradise of the genus *Epimachus*. By EDWIN WARD, F.Z.S.

[Received October 18, 1873.]

About the end of September last I received from Singapore a collection of New-Guinea birds, amongst which there was a skin of a new species of the Paradiseine group. I have the pleasure of exhibiting



this bird to the Meeting. It is evidently a male specimen in full plumage; and I propose for it the name *Epimachus ellioti*.

This species differs from the Grand Promerops (*E. magnus*) of Cuvier (of which I exhibit two specimens for comparison) in several respects. It is about one third less in size; and instead of being bluish green on the back and tail, the head, wings, and tail of this bird are beautifully illuminated with an amethyst colour; the plumage is also much thicker and more velvety in texture, probably even more so than any other species of the whole group. The breast is greenish; and on the chest is a line of indefinite tertiary shades. A line of steel-blue crosses the pectoral plumes, which are otherwise of a deep black. The back in this species is of a plain amethyst shade, and is not marked with spots as in *E. magnus*.

The upper mandible is 2 inches long: the entire length from beak to end of tail 22 inches; whereas *E. magnus* is often 40 inches. The two gorgeous central feathers of *E. ellioti* measure 16 inches. Tail-feathers twelve in number, as in *E. magnus*.

It is a custom of the natives of New Guinea to dismember their birds when preparing the skins; and in this specimen the legs and primary feathers are wanting. In general form this bird resembles *E. magnus*.

Of the haunts and habits of this bird I regret to say I cannot at present learn any thing.

The unique specimen referred to in this paper has been added to Mr. Gould's splendid collection, and will, I believe, be figured in his forthcoming work, 'The Birds of New Guinea.' An illustration of this bird by Mr. Wolf will appear in 'Elliot's Birds of Paradise.'

I beg leave also to exhibit a curious parasite taken from the breast of Elliot's *Epimachus*. In form this creature more resembles a sheep-tick than a bird-louse. I have before now seen similar parasites, especially on *E. magnus*.

I believe the parasites of Birds of Paradise remain as yet undescribed.

## 6. Extracts from the late Dr. Buchanan's 'Fishes of Bengal,' with Remarks. By Surgeon-Major FRANCIS DAY.

[Received October 14, 1873.]

It is with much pleasure that I am able to inform the Zoological Society that the long-missing papers of Dr. Buchanan on natural history have at last been discovered, and that I have been permitted to take copies of those relating to the ichthyology of Bengal.

Dr. W. W. Hunter, the Director-General of Statistics, when leaving England this year, was allowed by the Secretary of State for India to bring to this country the twenty-eight volumes of Dr. Buchanan's original manuscripts which have lain so long in the India Office, and which contain a detailed account of his statistical, zoological, and botanical investigations in districts under the Presidency of Bengal between the years 1803 and 1813.



Having obtained leave to examine these volumes, I found the ichthyological papers to contain six lists of fishes\* as follows:—Dinajpur 64 species, Ronggopur 126, Puraniya 134, Goruckpur 79, Bhagulpur 76, and Behar 62.

The above lists and the manuscript drawings at Calcutta are evidently those to which Dr. Hare alludes when he observes (July 27th, 1816), whilst requesting the Government to detain them in India, "now I apprehend that those drawings are already the property of the Honourable Court; the service for which Dr. Buchanan was employed and paid having specifically been the furnishing Government with a knowledge of the animal and vegetable productions of this country, delineations are essentially included in this service."

It has been well known for many years that Hamilton Buchanan was not in possession of all his ichthyological drawings when he published the 'Fishes of the Ganges.' But although it has been observed that he was deprived of all his extensive drawings and papers relating to every branch of natural history, I was quite unprepared to discover that his manuscript notes on fishes, which have now lain upwards of sixty years in the Government Archives, contain many remarks and much information not existing in his work.

These papers, in fact, form the key to the unpublished drawings; and several errors in the 'Fishes of the Ganges' may now be corrected from the author's own notes. I had proposed replying to Dr. Günther's positive denials of the correctness of some of my identifications of Dr. Buchanan's fishes; but perhaps it is as well to allow the author himself to decide the points in discussion, as the species come in this review.

#### LABEO CURCHIUS.

*Cyprinus curchius, cursa, cursis, et gonius.*

"101. The *Kurchha* of Goyalpara, by people of Assam is called Ghoni" (Ronggopur list). "56. The *Kurchha* of the Ronggopur list, No. 101, is called Kūrṣā, evidently the same name" (Behar list). "59. The *Kurchha* of Ronggopur, No. 101, is here called Kursi; and it must be observed that the names *Kurchha*, *Kurchi*, and *Kursi* are all the same, variously spelt and pronounced in different places, and applied with little or no discrimination to several fishes that have a very strong resemblance to each other."

#### CYPRINUS REBA, Ham. Buch.

*Cyprinus bangon.*

"52. The *Bhanggon* of Ronggopur, No. 95, is here called Buckti" (Goruckpur list). "95. The *Bhanggon* of Goyalpara in the marshes between Dewangunj and Goraghat is called Vacha, which at Goyalpara, Calcutta, &c. is a name given to a *Pimelode*, No. 55. At Calcutta the *Cyprin* of which I am now treating is called Bata.

\* 'Buchanan's Fish and Fisheries of Bengal' will immediately be ready for the press; his remarks on these subjects will be published in full.



It is the most common fish in the southern portions of the district, and grows to 2 feet in length" (Ronggopur list). "101. The 95th fish of the Ronggopur list, the Rēbā of the banks of the Kōsī, and the Rāikhārī of the Māhānāndā. This fish seems to suffer considerable alterations in colour from the nature of the water in which it lives. In marshes and small channels overgrown with weeds its back is green with a gloss of gold; while in clear water the whole is white and shines like silver" (Puraniya list). "60. The Bāngjhī rēwā is a *Cyprinus* approaching to a *Mugil*, and is the Bhanggon of the Ronggopur list, No. 95" (Bhāgālpūr list).

CYPRINUS ARIZA, Ham. Buch.

*Cyprinus acra*, Ham. Buch.

"96. The Akhra of the Korotoya is called Khoskibata at Calcutta, and simply Khoski in the central rivers of Dinajpur, No. 63. In my account of Mysore I have given a drawing of it under its Karnata name Ariza. It is the Kindu of the Tamuls" (Ronggopur list).

CYPRINUS CHAGUNIO, Ham. Buch.

*Cyprinus kunta*, MS. Ham. Buch.

*Barbus beavani*, Günther.

As far as concerns this fish, I have briefly to observe I captured specimens of what I had no doubt corresponded with Buchanan's *C. chagunio* in Orissa—that it equally agreed with *Barbus beavani*, Günther—that in the Calcutta Museum I found specimens labelled *C. chagunio* of this species—that on investigating Buchanan's MS. drawing I found a copy of one of his originals representing it, and labelled *C. chagunio*, besides which it had portions of another name on it, as observed by Dr. Günther, viz. *C. kunta*.

The drawing which I found\* thus labelled, Dr. Günther observes, "represents *Barbus beavani*," "that it is *Cyprinus kunta*," that "it is equally certain that it is not intended for the fish described as *Cyprinus chagunio*." Thus we both agree that *B. beavani* and *C. kunta*, labelled *C. chagunio*, are one and the same species.

In the Puraniya list we find "112. *Gārhān*, R. 110." If we turn to the Ronggopur list referred to, we find "110. The *Da-ranggi* of the Tista is in some places called *kunta*. It has a great affinity with the *Curmuca*, which is described in my account of Mysore, and with the following†, being about the same size and having nearly the same proportions and qualities." In the 'Fishes of the Ganges,' p. 294, we find the *C. curmuca* and *C. chagunio* placed next each other, and with the following remark:—"This and the following species have a great resemblance to the *Cyprinus cirrhosus*

\* Dr. Günther, before entering upon the question of what Buchanan's drawing is, corrects me on a matter of fact respecting the length of the barbels. My remark on such had reference to his description, "barbels subequal in length, rather longer than the eye."

† *C. sarana*.



of Bloch." Further remarks seem to me unnecessary; Buchanan's *C. chagunio*\* and *C. kunta* are evidently the same fish.

Before passing on to the next species there is another remark of Dr. Günther's I must reply to, viz.:—"it requires but slight acquaintance with Hamilton Buchanan's works to see that his rule was to count the last ray (which is *generally* split to the base) as one and not as two. Mr. Day's statement† to the contrary is to me quite incomprehensible; he needed only to compare Buchanan's descriptions with the plates" (P. Z. S. Dec. 5th, 1871). Again, "the only case which shows some obscurity is that of *C. dero*."

I will now put this nearly unqualified assertion to the proof, giving the dorsal rays as recorded by Hamilton Buchanan in his 'Index Methodicus,' and by Dr. Günther in his 'Catalogue of Fishes;' for if Buchanan always counted (except in one solitary instance) as does Dr. Günther, the numbers should be identical. *Pimelodus silondia*, H. B., D.  $\frac{1}{8}$ ; Günther, D.  $\frac{1}{7}$ . *P. pangasius*, H. B., D.  $\frac{2}{9}$ ; G., D.  $\frac{1}{7}$ . *P. rita*, H. B., D.  $\frac{2}{8}$ ; G., D.  $\frac{1}{6}$ . *P. gagora*, H. B., D.  $\frac{2}{9}$ ; G., D.  $\frac{1}{7}$ . *P. sagor*, H. B., D.  $\frac{2}{9}$ ; G., D.  $\frac{1}{7}$ . *P. arius*, H. B., D.  $\frac{2}{8}$ ; G., D.  $\frac{1}{7}$ . *P. jatius*, H. B., D.  $\frac{2}{8}$ . *P. nenga*, H. B., D.  $\frac{2}{9}$ . *P. sona*, H. B., D.  $\frac{2}{9}$ . *P. rama*, H. B., D.  $\frac{4}{8}$ . *P. tengana*, H. B., D.  $\frac{2}{8}$ ; G., D.  $\frac{1}{7}$ . I need not increase this list; even the last species had not apparently been seen by Dr. Günther; but so satisfied must he have become that Hamilton Buchanan had counted the last dorsal ray split to the root as 2, not as 1, *that he altered the figures from 8 to 7*, and, I am convinced, correctly so; he also changed them in *P. batasio* from D.  $\frac{2}{9}$ , H. B., to D.  $\frac{1}{7}$ . This increasing of the number of the dorsal rays by Hamilton Buchanan may be seen in *P. telchitta*, *P. bagarius*, *P. nangra*, *P. murius*, *P. gagata*, *P. gulio*, *P. menoda*, *P. cavasius*, and *P. aor*. Surely the foregoing twenty-two instances out of thirty-two consecutive species are sufficient to prove that Hamilton Buchanan frequently counted the last ray of the dorsal fin split to its base as two, although "*but a slight acquaintance*" with his writings might lead one to consider he counted them as one.

But Dr. Buchanan, besides sometimes counting the last dorsal ray divided to its base as two, occasionally decreased the number, as may be seen in *Cyprinus cachijs*, *C. sophore*, *C. ticto*, *C. chola*, *C. conchonijs*, &c. Consequently it must be admitted that in numbering these rays he was not always very precise. After this, remarks on *C. bata*, H. B., are unnecessary.

In his Ronggopur list he observes that *Cyprinus cocsa* was considered by the fishermen the male of *C. barila*, and *C. chedra* apparently the male of *C. chedrio*, but that he considered them distinct species.

\* The native name *Chaguni*, employed in the 'Fishes of the Ganges,' finds no place in the MS. notes; but this is by no means a solitary instance. However, in the MS. notes the *Kunta* is the only fish likened to the *C. curmuca*; and in the 'Fishes of the Ganges' the *Chagunio* is the only fish compared to the *Curmuca*, whilst *Kunta* and *Chagunio* are both on the same drawing; the first name is only found in the MS. notes, the second only in the published work.

† It would have been more strictly accurate had I said "often" or "frequently."



Now that the lists of the fish have been discovered, the next question is, *where are the type specimens?* Some are believed to be in the British-Museum collection presented by Mr. Waterhouse; others also seem to have been given by the Zoological Society. I am now having as close a search as I can made for any papers or records bearing on this question, and trust that any one who can afford information will communicate it to the Society. My reason for wishing this is that I hope shortly to commence a thorough re-examination of my collection of Indian fishes now in England (numbering about 12000 specimens in spirit, besides skins), and I wish to compare them with *undoubted types*.

Then, again, as to *Sykes's types* some confusion appears to exist. I long since observed the following in his 'Fishes of the Dukhun' (p. 355):—"Both Mr. Rüppell and Mr. Yarrell, who have done me the favour to look over my fishes, express their belief that the present fish," &c. Now the species he was alluding to was the *Cyprinus nukta*, of which no figure has been given; but *where is the specimen?* It is evident he brought his collection to England: some (*perhaps types*) he presented to the East-India Museum; others he either retained *or may have given to friends, who, it is possible, presented them in their own names to museums or institutions*. Any information on this point is therefore most desirable.

My belief that the British Museum possessed some of Sykes's types was confirmed by seeing the following remarks in 'The Catalogue of the Fishes,' 1864, vol. v. p. 46:—"a, b. Eight and a half to nine and a half inches long. From Colonel Sykes's collection. Types of *Schilbe pabo*, Sykes." The same of *Glyptosternum lonah*, p. 187, stated to be a type, but scarcely agreeing with the definition given by Sykes. However, it was asserted to be *the type*; and as such I accepted it.

I was therefore, I must confess, very much surprised at observing the following from Dr. Günther in the 'Proc. Zool. Soc.' Dec. 1871:—"Although I searched carefully the Museum (before and after the transfer of its fish-collection to the British Museum) for types of Colonel Sykes's paper, I failed to discover them."

I drew attention to this in a paper read before the Asiatic Society of Calcutta, July 3rd, 1872, and published in their Journal, as I have a very great interest in examining types of Indian species for the purpose of comparison with my own specimens.

In the 'Proc. Zool. Soc.' Dec. 3, 1872, p. 877, Dr. Günther remarks, "I must take this early opportunity to modify a statement made by me in P. Z. S. 1871, p. 763, to the effect that I had failed to discover in the East-India Museum the types of the Dukkun species described by Colonel Sykes. This is true as regards the majority of these fishes; but at the time I wrote this I had forgotten that in 1864 I believed that I had found two or three of his types. Although not the true names (if any) were attached to the bottles when they were transferred to the Museum, the name of Colonel Sykes was written on the labels; and I still believe the specimens to be typical."

Perhaps Dr. Günther is correct in his surmise; but it would have



been better had he stated *probably the types*, as apparently authority does not exist to say "the types" were given to the India-House Museum; whereas I think I have shown good reason for the belief that Sykes brought his collection to Europe, where he arrived in 1831, and that portions of his types may be in existence elsewhere.

I do not say this for the purpose of uselessly drawing attention to Dr. Günther's statements, but to a practical fact which may be deduced therefrom. Thus two specimens of *Glyptosternum* were found with Sykes's name on the bottle or bottles; these two appeared to be distinct species not previously described, unless by Sykes, who, however, had merely recorded one species of this genus as *Bagrus lonah*, and that without giving any figure.

It appears to have been assumed (I do not say incorrectly so) that one must be the type of *Bagrus lonah*, Sykes; and in the two recorded descriptions of these specimens given in the 'Catalogue of Fishes' we find:—

*Glyptosternum lonah*, apud Günther. A. 12. Pectoral spine with a *fine outer* and with a strong inner serrature.

*G. dekkanense*, Günther. A. 11. Pectoral spine strongly serrated internally.

In the 'Fishes of the Dekhun' we find it thus stated:—

*Bagrus lonah*. A. 10. Pectoral spine "furnished on the posterior edge with long sharp teeth."

I would suggest whether the names ought not to stand thus, *if one (which?) is in reality Sykes's type*:—

*Bagrus lonah*, Sykes, = *G. dekkanense*, Günther.

*Glyptosternum lonah*, Günther, not synonymous with *B. lonah*, Sykes; and perhaps the name *G. sykesi* might be considered appropriate.

## 7. Note on the Cæcum of *Canis cancrivorus*.

By A. H. GARROD, B.A., Prosector to the Society.

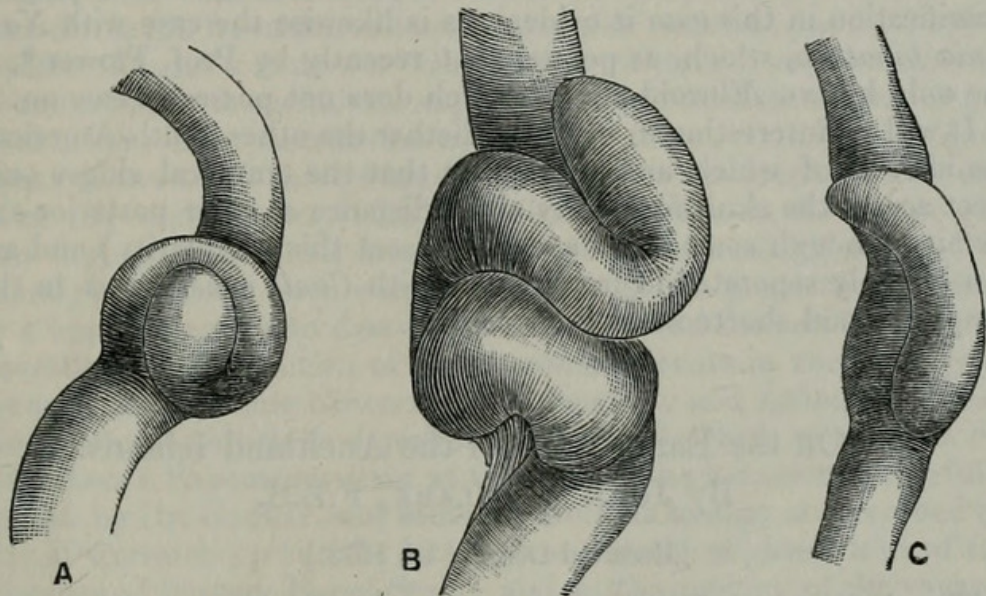
[Received October 18, 1873.]

The South-American *Canes* present peculiarities which have always made it difficult to determine their exact relation to the other members of the family. This difficulty is somewhat increased by the determination of the peculiarities of their visceral anatomy; for on eviscerating a specimen of *Canis cancrivorus* I found that the cæcum differs from that of other members of the genus. Whether the observed peculiarity holds in other closely allied species, and in other individuals of the same, can only be determined by the dissection of other specimens as they come to hand.

On the authority of Profs. Owen and Flower, and of the late Mr. H. N. Turner, the cæcum of all the Canidæ is uniformly cylindrical and peculiar in being folded on itself twice or three times in a serpentine manner (fig. B). On looking at the distended cæcum of the common Dog, with the distal or colic end downwards, the caput



upwards, and the appendix itself towards the observer, it is seen to spring from the junction of the small and large intestines with an abrupt turn to the left, which is followed very shortly by an equally



A. Cæcum of *Canis famelicus*.  
 B. Cæcum of *Canis familiaris*.  
 C. Cæcum of *Canis cancrivorus*. } all one half natural size.

sudden turn to the right, causing it to stand transversely to the direction of the intestine; a third bend to the left, above the others, leads to the cæcal end. This condition obtains in almost all the Canidæ. In a specimen of *C. famelicus* I find the cæcum much shorter than usual, and forming one and a quarter turn of a spiral, commencing by an upward turn to the left, and ending on the left side of the spire (fig. A). The only other peculiarity that is generally observed is that the third fold is less developed in some than in others. But in the specimen of *C. cancrivorus* above mentioned the cæcum is much shorter than usual, being only 2 inches long in a nearly adult male animal, and almost straight, not showing any tendency to the folding on itself otherwise typical of the genus (fig. C). In other points of its anatomy no peculiarities were detected. In the tongue the circumvallate papillæ were insignificant, three on each side, separated by a considerable interval. The fourth lower molar characteristic of the species (or genus *Thous* of Gray) was not developed, the third being small and not above the gum. The undistended stomach presented the characteristic form found in so many of the Carnivora and figured in my account of the viscera of the Binturong\*. The spleen had a rudimentary third lobe. The small intestine was 5 feet, and the large intestine 6 inches, in length; and the latter seemed to bifurcate symmetrically at its proximal end into the cæcum and the small intestine, the two latter being of equal diameter and scarcely smaller than the colon. The liver presented all the characteristics of *Canis familiaris*. In the generative organs, the prostate was fairly

\* P. Z. S. 1873, p. 198.



developed, and Cowper's glands were absent; the os penis was deeply grooved,  $1\frac{1}{2}$  inch long, and slightly curved.

That this animal is a true *Canis* is therefore clear; but that the peculiarities of the cæcum are not certain characters to employ in classification in this case is evident, as is likewise the case with *Nandinia binotata*, which, as pointed out recently by Prof. Flower\*, is the only known Æluroid animal which does not possess a cæcum.

It will be interesting to observe whether the other South-American Canidæ, all of which are peculiar in that the temporal ridges only meet across the skull for a very short distance at their posterior extremity (though some other species present this peculiarity) and are considerably separated in front, agree with *Canis cancrivorus* in the simplicity and shortness of their cæca.

## 8. On the Eared Seals of the Auckland Islands.

By JOHN W. CLARK, F.Z.S.

[Received October 18, 1873.]

The skulls which I have the pleasure of exhibiting to the Society to-night were brought from the Auckland Islands by M. Dumoutier, one of the naturalists who accompanied the French expedition sent in the 'Astrolabe' and 'Zélée' between the years 1837-1840 to the Antarctic Seas. The largest of the two smaller skulls was purchased in Paris by my late father in 1853, of M. Dumoutier himself; and the two others, together with some fragments of a third, were found by me a few weeks ago in the shop of M. Vasseur, 9 Rue de l'École de Médecine. He stated that they had formed, to the best of his belief, part of M. Dumoutier's collection—a fact which is put beyond all doubt by the handwriting upon them; for it is clearly the same on all three, and is also not to be distinguished from that on other objects received from him, and now in the Cambridge Museum. The skulls are marked respectively "*Phoque des Auckland*," "*Phoque des Iles Auckland*," and "*Phoque mâle adulte des Iles Auckland du Sud*."

The Auckland Islands lie between 800 and 900 miles S. of Tasmania, in lat.  $50^{\circ} 48'$  S., long.  $166^{\circ} 42'$  E. They were first discovered in 1806 by Captain Bristow, on board a whaler belonging to the Messrs. Enderby. During the next thirty-four years they appear to have been occasionally visited by vessels in search of whales and seals, but never to have been scientifically explored, nor was any note of their fauna or flora made. In 1840 they were visited by no less than three exploring-expeditions, viz.:—by the American brig 'Porpoise,' commanded by Lieut. Wilkes; the French corvettes 'Astrolabe' and 'Zélée;' and the English ships 'Erebus' and 'Terror,' under the command of Sir J. C. Ross. Wilkes investigated the botany of the islands, and the birds; but as he says that "besides the birds, the the only living creature was a small mouse," he evidently paid but

\* P. Z. S. 1872, p. 683.



little attention to the Mammalia\*. The French naturalists, who spent ten days there, give a graphic description of their visit to one of the bays frequented by the sealers. They say:—"C'est là que les baleiniers leur font la chasse pour recueillir leur peau, qui a une valeur assez élevée (20 fr. environ chaque), quoiqu'ils ne soient pas de l'espèce appelée phoques à fourrure. On rencontre à chaque pas des cadavres de ces animaux à moitié décomposés, et dont les crânes sont en général brisés; nous en trouvâmes un, entre autres, d'une taille gigantesque: il avait été tué quelques jours auparavant à coups de lance, et sa tête était intacte. Le Capitaine Robinson la fit couper afin d'en faire présent à M. Dumoutier qui la lui avait demandée"†. Shortly afterwards they caught another, taking pains to seize him by a lasso, so as not to damage him, and carried him on board ship. Nevertheless no mention of these animals occurs in the zoology of the expedition, where *Stenorhynchus leptonyx* and *Lobodon carcinophaga* are the only Seals described. During the three weeks that Sir J. C. Ross's Expedition staid at the Islands the botany was carefully studied by Dr. Hooker, and some notes on the zoology are recorded by Mr. McCormick‡; but the latter gives not the slightest hint of the existence of Seals or Eared Seals; and, in the zoology of the voyage, the Auckland Islands are never set down as a locality for any of the Seals described. Between 1850 and 1852 the islands were occupied as a whaling-station by the Messrs. Enderby, to whom they had been assigned by the English Government; but their business was rather to make money by whaling than to record the existence of any other marine mammal. Lastly, on Dec. 30, 1863, the schooner 'Grafton,' of Sydney, was wrecked upon the islands, where the captain and crew were condemned to reside for twenty months. In Captain Musgrave's very interesting journal§ will be found by far the most detailed account in existence of the habits of any species of Seal. I have done my best to combine all the notices of importance that are scattered through the pages of his narrative.

He found that the rocky coast of the Aucklands abounded with Seals; in a narrow channel that ran from one of the harbours to the sea, "we saw hundreds of Seals: both the shores and the water were literally swarming with them, both the Tiger and the Black Seal; but in general the Tiger Seals keep one side of the harbour, and the Black Seals, which are much the largest, the other side . . . . We also saw a Sea-lion" (p. 7). A "Black Seal" is mentioned, one of whose canine teeth was  $3\frac{2}{3}$  inches long,  $1\frac{1}{2}$  inch in circumference at the gum, and  $5\frac{3}{4}$  inches at the base (p. 66).

One would expect to find on first reading this passage that the "Tiger Seals" were the *Stenorhynchus leptonyx*, a true Seal; but

\* Narrative of the United States Exploring Expedition, by Charles Wilkes, during the years 1838-1842, vol. ii. p. 353.

† 'Voyage au Pôle Sud et dans l'Océanie sur les corvettes l'Astrolabe et la Zélée,' Histoire du Voyage, ix. p. 110.

‡ Voyage of Discovery and Research in the Southern and Antarctic Regions during the years 1839-43, by Capt. Sir J. C. Ross, vol. i. pp. 129-154.

§ Cast-away on the Auckland Isles. By Captain Thomas Musgrave. London, 1866.



subsequently (p. 142) he identifies them with the Sea-lions, of which he gives a detailed account in an appendix. He apparently paid little or no attention to the "Black Seal," but beguiled the tedium of his miserable captivity by noting the habits of the other species, in which, as they were the chief article of food of himself and his companions, he took a grateful interest. He says, "We eat the cow and the calf Tiger Seals: the Black Seal is not good; and the bulls are all very rank" (p. 11). Again: "Not very long ago we thought it would be impossible to eat this kind of Seal (the Black Seal): and indeed they are not by any means fit for food; for the strong smell of the meat is enough not only to disgust, but to stifle a person" (p. 67. Compare also p. 6).

In an appendix he gives "An account of the Sea-lion and its habits" (p. 141 *sq.*), from which I extract the most important portions:—

"The females are of a grey, golden buff, or beautiful silver colour, sometimes spotted like the Leopard, and are called Tiger Seals. Their fur is about an inch long, not very soft, but very thick, and particularly sleek and smooth . . . . On the upper lip, on each side, are thirty bristles (they seldom deviate from this number), of a hard horny nature, and resembling tortoise-shell in appearance, from 6 to 8 inches long, gradually decreasing as they approach the nose to  $1\frac{1}{2}$  or 2 inches in length.

"The males are uniformly of a blackish grey colour. The fur and skin are superior to those of the female, being much thicker, and the former finer from the shoulders backwards, though not so pretty. On the neck and shoulders he has a thicker, longer, and much coarser coat of fur, which may almost be termed bristles. It is from 3 to 4 inches long, and can be ruffled up and made to stand erect at will."

A male "of a medium size" will measure about 6 feet from nose to tail, and about 6 or 7 feet in circumference, and weigh about 5 cwt. The females are "proportionately smaller" than the bulls (p. 142 *sq.*).

One of the most interesting details that he gives concerns their movements upon land. He says, "They go roaring about the woods like wild cattle" (p. 5). "They run very fast in the bush" (p. 10). "We were in a thick bush, so that he (an old Tiger Seal) had a decided advantage" (p. 18). "When they are on shore they can run surprisingly fast; on a hard, smooth beach they can run nearly as fast as a man; and in the bush, or long grass, they can get along much faster. They can also climb up rocky cliffs and steep slippery banks that would be inaccessible to man" (p. 149). "The bulls are very bold, and will come out of the water and chase us. They are particularly fierce" (p. 78). On going up a mountain to the N.E. of the tent, "I found Seal-tracks," he says, "nearly to the top, which I reckon is about four miles from the water; and about three miles up I saw a Seal" (p. 9).

To this may be added the description of Mr. Morris, for many years a sealer by profession, and now residing in Sydney:—"Adult male or wig uniformly blackish; pups born black; after a few weeks





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