

February 10, 1857.

J. Gould, Esq., F.R.S., V.P., in the Chair.

The following paper was read:—

ON THE ANATOMY OF THE GREAT ANTEATER (*MYRMECOPHAGA JUBATA*, LINN.). PART II. BY PROFESSOR OWEN, F.R.S., F.Z.S., ETC.\*

In my former communication on the Anatomy of the Great Anteater, the position of the stomach and its relations to adjoining viscera were briefly pointed out. In the present paper I propose to describe the form and structure of this very remarkable organ in the *Myrmecophaga jubata*.

Moderately distended the stomach presents a subglobular form, of about 8 inches diameter, with a smaller subglobular appendage, as it seems, of about 3 inches diameter, intervening between the main cavity and the intestine.

The œsophagus terminates near the middle of the upper surface of the main portion, of which about 4 inches extends to the left of the cardiac orifice to form what Haller called the 'saccus cæcus.' The general configuration of the stomach, as seen from the anterior surface, will be shown in the first Plate.

On the middle of both the anterior and posterior surfaces of the stomach is a sheet of tendon, of an irregular triangular form, 6 inches in longest diameter, which is in the direction of the length of the stomach, and in which the tendon extends from the large to the small division of the organ, and acquires upon the latter its greatest thickness and whitest colour.

Upon bisecting the stomach lengthwise, the part described as the main cavity is seen to correspond with the cardiac division, and the seeming appendage, with the pyloric division, of the stomach in *Rodentia*: but they are much more distinct in structure and functions in the *Myrmecophaga* than in any other mammal with a stomach similarly divided externally. The cardiac cavity has a vascular secreting surface, the lining membrane being disposed in very numerous small rugæ; at the parts where the parietes have yielded most to the distending force, these rugæ are nearly effaced: other larger and more permanent folds are nearly straight, are confined to the vicinity of the communication with the pyloric cavity, and converge towards the aperture.

The cardiac orifice, in the inverted stomach, presents the form of a narrow, slightly bent crescentic slit. It is situated about  $3\frac{1}{2}$  inches from the similarly shaped aperture of communication between the cardiac and the pyloric cavities: but the margin of this latter aper-

\* This paper will be reprinted in the Transactions, and there illustrated with 4to plates.



ture is indented as it were by the ends of the converging folds of the lining membrane, about ten in number, which are continued into the pyloric cavity. The length of the cardiac slit is 1 inch; that of the intercommunicating aperture is 1 inch 3 lines.

The pyloric division of the Anteater's stomach is remarkable for the thickness of its muscular tunic and the density of its epithelial lining, which convert it into a veritable gizzard.

The muscular coat varies from one inch to half an inch in thickness; at the middle of the cavity it is separated from the lining membrane by an unusual accumulation of the elastic submucous cellular tissue, which is most accumulated in the upper wall of the cavity. A very small proportion, only, of food can enter at one time into this cavity, to be subjected to the triturating force of its parietes, operating with the aid of swallowed particles of sand in the comminution of the unmasticated or imperfectly masticated termites.

The area of the pyloric cavity, as exposed by a vertical longitudinal section, appears a mere linear, slightly sinuous tract, with a dilatation near the pylorus, due to a kind of valvular protuberance of the upper wall projecting towards that aperture. But, when the pyloric cavity is bisected transversely, its area then presents a crescentic figure, owing to the protuberance formed by the thicker muscular tunic and the more abundant submucous elastic tissue in the upper parietes. The lower longitudinal plicæ, which commenced on the cardiac side of the intercommunicating aperture, give a longitudinally ridged character to the inner surface of the cavity.

This character is changed, near the pylorus, for a reticular rugosity: the pylorus, when viewed from the duodenal side, presents a crescentic form, with the horns of the crescent directed upwards. The lining membrane of the duodenum soon becomes smooth.

Mr. Gould communicated the following letter, lately received by him from M. Elsey, Esq., the Surgeon and Naturalist attached to the Expedition under the command of A. C. Gregory, Esq., now engaged in exploring the north-western and northern portions of Australia. Mr. Gould considered this communication to be of great value, inasmuch, as, besides mentioning that the writer had acquired an extensive collection of birds, it contains numerous very interesting observations respecting the various species which had been met with in the neighbourhood of the Victoria River Dépôt, N.W. Australia, lat. south  $17^{\circ} 34' 30''$ ; their interest being much enhanced by the circumstance of many of them referring to several forms not previously known to occur in that part of the country.

Victoria River Dépôt, N.W. Australia,  
S. Lat.  $17^{\circ} 34' 30''$ .  
June 1856.

MY DEAR SIR,

I am sorry I cannot send you any account of large collections or extensive ornithological notes. Circumstances over which



I could have no control have kept me a close prisoner at this camp since last October. My collection of birds comprises up to the present time 103 species, some of which are, I think, new. Of Hawks I have five kinds, including two species of *Milvus*. The latter feed entirely on grasshoppers, are most cowardly birds, and utter a peculiar shrill wailing cry. The first I procured was of a very uniform dark, dirty brown colour. It was common on our first arrival here, but disappeared about December, and was soon replaced by *Milvus affinis*, which has latterly become very numerous, and now perches in hundreds on the trees around the camp. These birds are excellent eating, and certainly exceed any other game we have here in flavour and tenderness. There are also three Eagles, neither of which I have been able to get, for though knocked down with our largest shot, they have got away; one has a dark-slate upper surface and wings, and white breast and belly. It frequents Sandy Island, the Stony Spit, and other parts of the river where sandbanks afford good fishing ground. The second is smaller, and of a pure white. I have only seen it once, when passing some dangerous rapids in the boat. The third is brown, with a very light-coloured and small head and neck, while the wings have an immense expanse. I should mention that one of our men found the black and white Eagle nesting in April. The nest was of immense size, and contained a single purely white egg of an almost globular form.

I have three Owls. The Barking Owl of these parts is a fine bird, the upper surface of which is beautifully mottled with dark-red and cinnamon-browns; while the under surface is white, with a central streak of brown in the feathers of the breast. It builds in the hollows of the huge Gouty-stem tree (*Adansonia*) of this coast, and incubates in March and April. Another is a large dirty slate-brown bird, with rough, dull yellow beak and legs. I procured one specimen only early in November, most likely a stray bird. The third was an *Athene*, rather smaller, of a mottled brown. The stomachs of all the specimens of the *Athene* were crammed with orthoptera.

There is one true *Caprimulgus* here, of a beautiful warm mottled brown and black, and with white on the wings. It lays a dull white or greyish egg, marked with dirty green, at the foot of a tree, on the bare uneven ground. I have two species of *Ægotheles*, both of which I flushed from the holes of trees; and I have seen a large *Podargus*, with huge cellular mandibles, which was shot by the mate of the schooner, and spoilt by insects when I saw it.

About the middle of December a large flight of Swallows arrived from the south, high in the air and out of shot. They remained about us one afternoon, wheeling in the air, but did not pitch, and were gone next morning. A little Martin common here just now (May and June), is equally shy, and I cannot find its place of resort. Two *Dacelos* are frequently seen: one entirely coloured with shades of blue and grey, and with a crest of lengthened feathers on the back of the head; the other blue and warm red-brown, with finer and stronger tints than the other, and without a crest. A dull-



coloured *Halcyon* (?) *sanctus* is common ; and I have shot a single pair of the beautiful *Alcyon pulchra*, which I have only seen once. My men, some of whom take great interest in my collection, mention another, which I have not seen. According to their account, it is a lovely bird, the under surface fine purple, &c. Of *Artamus* I have several species, but have no means of determining them. They usually frequent stumps and dead logs in open flats, in twos and threes, and are very active. One species only, a dusky little fellow, lives on the tops of the ranges. I have seen a number of this species sitting round the top of a lofty Palm (*Levistona*), whose head had been struck off by storm or whirlwind ; it was more than 80 feet high, and, swayed in the breeze and the circle of birds, with their heads directed inwards and their tails turned outwards, had an absurd effect. Of Shrikes I have two or three, including *Grauculus melanops*. I do not know *Grallina Australis*, nor have I heard its cry, so often alluded to by Leichardt, unless indeed a black and white bird with whitish very long tarsi, and white, rather blunt and soft beak, which builds a mud nest in the branches of trees near the water, be it. It has a peculiar shrill cry as it rises from the water, and is called the "Water Magpie" by our stockmen.

Of Fly-catchers and Robins, so called, I have seven or eight species. One robin has a slate-grey back, black head and wings, and chestnut flanks, with a white stripe over the eye ; it lives in the mangroves, and may be recognized at all times by its pretty little piping note. I found it nesting in November and again in February and March ; the nest is an open, shallow, slightly constructed one ; the eggs two in number, dull greenish-grey, speckled with brown mostly at the larger end.

There are three or four Wrens ; one a brilliant glossy black, with scarlet back and rump ; this is the male bird, which does not attain this plumage till the second moulting. The young birds are uniform dull wren colour. After the first moulting they have a darker tint, and a few feathers between the shoulders tipped with red, and perhaps a single black feather in the tail. At the second moulting they acquire all their gloss, and may then be seen surrounded by a group of newly fledged birds. The female is dull wren-brown, with a lighter under surface. There is another beautiful Wren much larger and longer in the body ; it has a beautiful purple top to the head, with oval spot of glossy black in the centre, and black zone outside it ; the body is greyish-brown ; the tail is long, of a blue tint, and having a sort of water-mark, if I may so call it, on the surface, which gives various shades to the colour. There is also another Wren of the same size and form and with a similar tail, but with a plain grey head and a chestnut spot over the ear-coverts. This is a female, the other a male ; of each I have only a single specimen. All these build a dome-shaped nest of grass, in a low bush or tuft of grass, and lay about February and March four white eggs, quite translucent : the yolk shining through gives them a rose tint. I have shot lately (May) a bird allied to *Cinclorhamphus*, but to what genus it belongs I do not exactly know. Of two specimens one had



in its stomach large green seeds, the other bark, bugs and various insects.

The Finches are very numerous and very beautiful. I have ten or twelve species, including *Estrela annulosa* and *Poëphila personata*, of which there are two or three varieties, similar in size, habits and body colour, but differing in the glossy black of the face and chin, and in the colour of the beak and legs. The beautiful *Poëphila Gouldiæ* is tolerably numerous; of this also there are two varieties or species: one with a black face, surrounded by a line of bright blue; the other has the anterior half of the face scarlet, the rest black, edged with blue. Of both the breast is bright purplish-lilac; the belly canary-yellow; the back a mixture of bright green and dark brown, with light blue mixed over the rump.

There are two *Donacolas*: *flaviprymna*, and a crimson and brown one, of which there are one or two varieties. The *Donacolas* build in some parts in low tea-trees overhanging water, making a large spouted nest with a small cavity, of dry bark of tea-trees; and *Pandanus*. The *Poëphilæ* generally have large nests of grass on the ground or in low tufts of grass; one species builds in the small bushes of *Calliotrix* and *Melaleuca*, and composes its nest of minute dry twigs, often so slenderly that it appears to have a double opening. The *Estrelæ* build smaller and stouter nests in young *Eucalypti* and small trees, from 15 to 20 feet high. They all lay six white eggs.

I have met with two or three nests of the bower bird, *Chlamydera nuchalis*, but no one of my party has seen the birds.

The Crow of this part of the country is a large bird, generally solitary, with a small eye and hazel-brown iris; it is very wary, and with difficulty shot.

The *Meliphagidæ* are not numerous, at least the more common species; the *Tropidorhynchus* is feathered all over the head, and does not merit its vulgar name. There is another resembling it somewhat here, but without its singular voice, and with a stouter beak. It is much like *Anthochaera*. A true *Merops* is also met with.

I have been unable to learn anything of the habits or nidification of the *Meliphagidæ* at present.

I have not observed any true Cuckoo here, and have failed to discover the *Cuculus dumetorum* of this coast; but I have seen two Cuckoo Pheasants (*Centropus*), one much lighter-coloured than the Moreton Bay species; the other with an almost black under surface, and the general plumage of a dark tint.

A *Climacteris* of dusty-brown plumage, with a brownish-yellow spot on the wings, looks very handsome when sailing with outspread wings and tail from tree to tree, or when hopping round the trunk and branches of the gum-trees, where it feeds much on the larvæ contained in the small tough cylindrical chrysales suspended in hundreds in the cracks of the bark. It loses all its beauty when prepared as a museum specimen.

Of Cockatoos: *Cacatua galerita*, *sanguinea*, and *Eos*, are abundant here, the two latter especially. Leadbeater's Cockatoo, with the fine



red crest, was also seen on the southern slope of the dividing range south of lat.  $18^{\circ}$  S., and extending to the margin of the desert in lat.  $20^{\circ}$  S. It is common in the northern districts of West Australia, north of the Murchison. I have been hitherto most unfortunate in my attempts to get a Black Cockatoo. Several, however, have been shot and their tail-feathers, &c. brought in. I found *Aprosmictus erythropterus* for the first time in January; on dissection, I found the os furcatorium very small, and buried in the substance of the pectorals.

I have not found a single *Platycercus* or *Euphema*, and only two Honey Parrots, *Trichoglossus versicolor* and *T. rubritorquis*; *Nymphicus Novæ-Hollandiæ* appeared suddenly in the beginning of April, and was followed in about a fortnight by *Melopsittacus undulatus*; both became very numerous, feeding about the burnt patches of ground; they are now (June) becoming scarce.

Pigeons are not very numerous. I found *Ptilonopus Swainsoni* at Quail Island on the coast near Port Paterson, and the fine *Carpophaga leucomela* at Point Pearce, near a swamp at which we were encamped in October; I was unable to preserve it, and have not seen it again.

*Phaps histrionica*, or a pigeon very similar to it, has been found lately in May, and another Bronze-wing smaller, and of a uniform greyish brown with white tip to the tail, red cere, and silver-grey iris, has been common during our stay. I have been disappointed in not getting *Geophaps plumifera*. It was often seen on the route from Point Pearce, and was very numerous, with another and larger-crested Pigeon at the second dépôt, established on a branch of the Upper Victoria in lat.  $17^{\circ} 3'$  S.

The *Petrophassa albipennis* is common among the sandstone cliffs of the ranges. Of two *Geopeliæ*, one is speckled, and has a silver-grey iris; the other has a beautiful lavender-coloured breast, and pink iris, with broad bright red orbits. Both are elegant, timid birds, and their liquid voices can be heard during the heat of the day, when all else is still. Neither of these Pigeons has the peculiar vocal powers noticed in *Geop. tranquilla* by Captain Sturt. The speckled one makes a very slight flattish nest of sticks on the horizontal fork of a branch, in which it deposits two white eggs.

One *Megapodius* was shot at Point Pearce, where in the hurry and confusion I could not preserve it; it was of compact form, of a uniform olive-brown plumage, with a stout beak, red iris, and strong tarsi and toes, the hinder especially. No mounds were seen during our short stay there.

A small Quail is common among the grass, but I have not yet obtained it.

Both *Dromaius* and *Otis* are of the same size, and in every way similar to those of the south; we have nowhere confirmed the observations of Leichardt and his black fellow as to their smaller size. Indeed Mr. Gregory believes, and I think most justly, that the *Emu* may cross the entire continent from east to west, or north to south,



its habits being strictly wandering. It has no regular feeding ground or drinking place; its tracks are everywhere, and it is for ever on the move.

Of Waders I have a considerable number, but am unable to determine many of the species, as I am entirely without books of reference. I have found the beautiful *Lobivanellus lobatus* common during March and April on the sand-banks of the fresh water; it was usually associated with a small white *Himantopus*, with black wings and head. A long and pointed winged bird resembling *Glaucola* is also frequent; it feeds on the wing, on grasshoppers, &c. about the *Polygonum* and other bushes fringing the banks.

I have seen *Falcinellus*, but could not get it. I have also one white *Platalea*, the *Jabiru* or *Mycteria*, and two or three Herons. The Night Heron, *Nycticorax*, is common, frequenting the dense mangroves, where it remains during the day, but flies at the most distant noise. I have also a single specimen of *Tribonyx* and *Fulica*.

I have not had much opportunity of procuring *Natatores*. The Whistling Duck is very common, and was frequently shot on lagoons in the interior, but is very wary on the river. Large V-shaped flights of them passed over our camp during March from S.E. to N.W., in which direction they appear to have a favourite resort. I have also another Duck, similar to it, but smaller, with a soft dull-brown plumage.

I have seen *Nettapus pulchellus*, but could not get it. Indeed my opportunities of examining the river have been so much more limited than those Captain Stokes enjoyed, that many of his birds I have not even seen. And owing to our small number I have generally on these excursions been obliged to take an oar myself, and could not therefore keep a very bright look-out.

The *Plotus* is common here, and excellent eating. During February and March it was incubating. It chooses large trees that hang over the water above or through the mangroves, and in these a number of them build a colony of large coarse flattish nests of dead sticks and twigs, which appear, from the quantity of dirt about them and their stained appearance, to be used year after year. Each season they place in the centre a few fresh green leaves, and on these lay three or four white eggs, with a very earthy opaque, but brittle shell; the lining membrane is of a blue-grey colour; they are rather smaller and more elongated than a hen's egg. We have enjoyed many fine meals of these eggs, sometimes getting from forty to fifty in a single tree. Both birds sit. The male is of a glossy greenish-black, with a little brownish-grey on the wings and wing-coverts. The female has a white under surface, but is otherwise similar.

The Pelican is white, with black wings, and a very fine blue and purple margin round the pouch. It is, I presume, *Pelecanus conspicillatus*. Its breeding season is March and April.

I have thus endeavoured to give you a rough abstract of my collections hitherto; I am now about to begin work really, as I start with the party in a few days for the Albert River, and from thence,



if all 's well, to Moreton Bay. I shall have much pleasure in writing to you from the Gulf of Carpentaria, should I have anything of interest to communicate.

I remain,

My dear Sir,

Your obedient Servant,

John Gould, Esq.

M. ELSEY.

February 24, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. ON THE SKULL OF A MANATUS FROM WESTERN AFRICA.  
BY DR. BALFOUR BAIKIE, F.R.GEOG.S.

(Mammalia, Pl. LI.)

Until very recently but two species of the somewhat scarce genus *Manatus* have been acknowledged by naturalists, viz. *M. australis* (the *M. Americanus* of some writers) and *M. Senegalensis*. Of these the former inhabits chiefly the mouths of the great rivers of the north-eastern coast of South America, and the West Indies, while the latter is confined to the tropical portions of the western coast of Africa. Some writers, as Hernandez, mention a species found along the coasts of Peru; but, if so, little or nothing is known of it or its habits. Wyman has described as *M. nasutus* what is probably a variety of *M. Senegalensis*, and Harlan as *M. latirostris* another Manatee from the Gulf of Mexico, which, however, seems to be a good species.

Individual specimens of *Manati* have rarely been met with along our own shores, as that recorded by Prof. Fleming\* as having occurred in the Shetland Islands in 1823; and I am in possession of tolerable evidence, which I intend shortly to publish, that a similar animal has made its appearance from time to time in Orkney, where it is not unknown to fishermen. These are most probably stray members of *M. australis* which have crossed the Atlantic, which belief is, to some extent, supported by the fact that in Orkney they have always been seen on the western or Atlantic side of the islands.

The *M. Senegalensis* has been found in the Senegal, the Gambia, and some rivers of Western Africa; and *Manati* have also been

\* *Vide* Fleming in Edin. New Phil. Journal, and Baikie and Heddle's 'Historia Naturalis Orcadensis.'





Owen, Richard. 1857. "On the Anatomy of the Great Anteater (*Myrmecophaga jubata*, Linn.). Part II." *Proceedings of the Zoological Society of London* 1857, 22–29. <https://doi.org/10.1111/j.1096-3642.1857.tb01192.x>.

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