

## AMERICAN ANHINGA OR SNAKE-BIRD.

† *PLOTUS ANHINGA*, Linn.

PLATE CCCCXX.—MALE AND FEMALE.

The Snake-bird is a constant resident in the Floridas, and the lower parts of Louisiana, Alabama, and Georgia. Few remain during winter in South Carolina, or in any district to the eastward of that State; but some proceed as far as North Carolina in spring, and breed along the coast. I have found it in Texas in the month of May, on the waters of Buffalo Bayou, and the St. Jacinto river, where it breeds, and where, as I was told, it spends the winter. It rarely ascends the Mississippi beyond the neighbourhood of Natchez, from which most of the individuals return to the mouths of that great stream, and the numerous lakes, ponds, and bayous in its vicinity, where I have observed the species at all seasons, as well as in the Floridas.

Being a bird which, by its habits, rarely fails to attract the notice of the most indifferent observer, it has received various names. The Creoles of Louisiana, about New Orleans, and as far up the Mississippi as Pointe Coupé, call it “Bec à Lancette,” on account of the form of its bill; whilst at the mouths of the river it bears the name of “Water Crow.” In the southern parts of Florida, it is called the “Grecian Lady,” and in South Carolina it is best known by the name of “Cormorant.” Yet in all these parts, it bears also the name of “Snake-bird;” but it is nowhere with us called the Black-bellied Darter,” which, by the way, could only be with strict propriety applied to the adult male.

Those which, on the one hand, ascend the Mississippi, and, on the other, visit the Carolinas, arrive at their several places of resort early in April, in some seasons even in March, and there remain until the beginning of November. Although this bird is occasionally seen in the immediate vicinity of the sea, and at times breeds not far from it, I never met with an individual fishing in salt water. It gives a decided preference to rivers, lakes, bayous, or lagoons in the interior, always however in the lowest and most level parts of the country. The more retired and secluded the spot, the more willingly does the Snake-bird remain about it. Sometimes indeed I have suddenly come on some in such small ponds, which I discovered by mere accident, and in parts of woods so very secluded, that I was taken by



surprise on seeing them. The Floridas therefore are peculiarly adapted for this species, as there the torpid waters of the streams, bayous, and lakes, are most abundantly supplied with various species of fish, reptiles, and insects, while the temperature is at all seasons congenial, and their exemption from annoyance almost unparalleled. Wherever similar situations occur in other parts of the Southern States, there the Anhingas are met with in numbers proportioned to the extent of the favourable localities. It is very seldom indeed that any are seen on rapid streams, and more especially on clear water, a single instance of such an occurrence being all that I have observed. Wherever you may chance to find this bird, you will perceive that it has not left itself without the means of escape; you will never find one in a pond or bayou completely enclosed by tall trees, so as to obstruct its passage; but will observe that it generally prefers ponds or lakes surrounded by deep and almost impenetrable morasses, and having a few large trees growing out of the water near their centre, from the branches of which they can easily mark the approach of an enemy, and make their escape in good time. Unlike the Fish-hawk and King-fisher, the Anhinga however never plunges or dives from an eminence in procuring its prey, although from its habit of occasionally dropping in silence to the water from its perch, for the purpose of afterwards swimming about and diving in the manner of the Cormorant, some writers have been led to believe that it does so.

The Black-bellied Darter, all whose names I shall use, for the purpose of avoiding irksome repetitions, may be considered as indefinitely gregarious; by which I mean that you may see eight or more together at times, during winter especially, or only two, as in the breeding season. On a few occasions, whilst in the interior of the southernmost parts of Florida, I saw about thirty individuals on the same lake. While exploring the St. John's river of that country in its whole length, I sometimes saw several hundreds together. I procured a great number on that stream, on the lakes in its neighbourhood, and also on those near the plantation of Mr. BULOW, on the eastern side of the Peninsula. I observed that the young Darters, as well as those of the Cormorants, Herons, and many other birds, kept apart from the old individuals, which they however joined in spring, when they had attained their full beauty of plumage.

The Anhinga is altogether a diurnal bird, and, like the Cormorant, is fond of returning to the same roosting place every evening about dusk, unless prevented by molestation. At times I have seen from three to seven alight on the dead top branches of a tall tree, for the purpose of there spending the night; and this they repeated for several weeks, until on my having killed some of them and wounded others, the rest abandoned the spot, and after several furious contests with a party that roosted about two miles off,



succeeded in establishing themselves among them. At such times they seldom sit very near each other, as Cormorants do, but keep at a distance of a few feet or yards, according to the nature of the branches. Whilst asleep, they stand with the body almost erect, but never bend the tarsus so as to apply it in its whole length, as the Cormorant does; they keep their head snugly covered among their scapulars, and at times emit a wheezing sound, which I supposed to be produced by their breathing. In rainy weather they often remain roosted the greater part of the day, and on such occasions they stand erect, with their neck and head stretched upwards, remaining perfectly motionless, as if to allow the water to glide off their plumage. Now and then, however, they suddenly ruffle their feathers, violently shake themselves, and again compressing their form, resume their singular position.

Their disposition to return to the same roosting places is so decided that, when chased from their places of resort, they seldom fail to betake themselves to them during the day; and in this manner they may easily be procured with some care. Whilst at Mr. BULOW'S, I was almost daily in the habit of visiting a long, tortuous bayou, many miles in extent, which at that season (winter) was abundantly supplied with Aningas. There the Otter, the Alligator, and many species of birds, found an ample supply of food; and as I was constantly watching them, I soon discovered a roosting place of the Snake-birds, which was a large dead tree. I found it impossible to get near them either by cautiously advancing in the boat, or by creeping among the briars, canes, and tangled palmettoes which profusely covered the banks. I therefore paddled directly to the place, accompanied by my faithful and sagacious Newfoundland dog. At my approach the birds flew off towards the upper parts of the stream, and as I knew that they might remain for hours, I had a boat sent after them with orders to the Negroes to start all that they could see. Dragging up my little bark, I then hid myself among the tangled plants, and, with my eyes bent on the dead tree, and my gun in readiness, I remained until I saw the beautiful bird alight and gaze around to see if all was right. Alas! it was not aware of its danger, but, after a few moments, during which I noted its curious motions, it fell dead into the water, while the reverberations consequent on the discharge of my gun alarmed the birds around, and by looking either up or down the bayou I could see many Aningas speeding away to other parts. My dog, as obedient as the most submissive of servants, never stirred until ordered, when he would walk cautiously into the water, swim up to the dead bird, and having brought it to me, lie down gently in his place. In this manner, in the course of one day I procured fourteen of these birds, and wounded several others. I may here at once tell you that all the roosting places of the Anhinga which I have seen were over the water, either on the shore or



in the midst of some stagnant pool; and this situation they seem to select because there they can enjoy the first gladdening rays of the morning sun, or bask in the blaze of its noontide splendour, and also observe with greater ease the approach of their enemies, as they betake themselves to it after feeding, and remain there until hunger urges them to fly off. There, trusting to the extraordinary keenness of their beautiful bright eyes in spying the marauding sons of the forest, or the not less dangerous enthusiast, who, probably like yourself, would venture through mud and slime up to his very neck, to get within rifle shot of a bird so remarkable in form and manners, the Anhingas, or "Grecian Ladies," stand erect, with their wings and tail fully or partially spread out in the sunshine, whilst their long slender necks and heads are thrown as it were in every direction by the most curious and sudden jerks and bendings. Their bills are open, and you see that the intense heat of the atmosphere induces them to suffer their gular pouch to hang loosely. What delightful sights and scenes these have been to me, good reader! With what anxiety have I waded toward these birds, to watch their movements, while at the same time I cooled my over-heated body, and left behind on the shores myriads of hungry sand-flies, gnats, mosquitoes, and ticks, that had annoyed me for hours!

The peculiar form, long wings, and large fan-like tail of the Anhinga, would at once induce a person looking upon it to conclude that it was intended by nature rather for protracted and powerful flight, than for spending as it does more than half of its time by day in the water, where its progress, one might suppose, would be greatly impeded by the amplitude of these parts. Yet how different from such a supposition is the fact? The Anhinga in truth is the very first of all fresh-water divers. With the quickness of thought it disappears beneath the surface, and that so as scarcely to leave a ripple on the spot; and when your anxious eyes seek around for the bird, you are astonished to find it many hundred yards distant, the head perhaps merely above water for a moment; or you may chance to perceive the bill alone gently cutting the water, and producing a line of wake not observable beyond the distance of thirty yards from where you are standing. With habits like these it easily eludes all your efforts to procure it. When shot at while perched, however severely wounded they may be, they fall at once perpendicularly, the bill downward, the wings and tail closed, and then dive and make their way under water to such a distance that they are rarely obtained. Should you, however, see them again, and set out in pursuit, they dive along the shores, attach themselves to roots of trees or plants by the feet, and so remain until life is extinct. When shot dead on the trees, they sometimes cling so firmly to the branches that you must wait some minutes before they fall.



The generally received opinion or belief that the Anhinga always swims with its body sunk beneath the surface is quite incorrect; for it does so only when in sight of an enemy, and when under no apprehension of danger it is as buoyant as any other diving bird, such as a Cormorant, a Merganser, a Grebe, or a Diver. This erroneous opinion has, however, been adopted simply because few persons have watched the bird with sufficient care. When it first observes an enemy, it immediately sinks its body deeper, in the manner of the birds just mentioned, and the nearer the danger approaches, the more does it sink, until at last it swims off with the head and neck only above the surface, when these parts, from their form and peculiar sinuous motion, somewhat resemble the head and part of the body of a snake. It is in fact from this circumstance that the Anhinga has received the name of Snake-bird. At such a time, it is seen constantly turning its head from side to side, often opening its bill as if for the purpose of inhaling a larger quantity of air, to enable it the better to dive, and remains under water so long that when it next makes its appearance it is out of your reach. When fishing in a state of security it dives precisely like a Cormorant, returns to the surface as soon as it has procured a fish or other article of food, shakes it, if it is not too large often throws it up into the air, and receiving it conveniently in the bill, swallows it at once, and recommences its search. But I doubt much if it ever seizes on any thing that it cannot thus swallow whole. They have the curious habit of diving under any floating substances, such as parcels of dead weeds or leaves of trees which have accidentally been accumulated by the winds or currents, or even the green slimy substances produced by putrefaction. This habit is continued by the species when in a perfect state of domestication, for I have seen one kept by my friend JOHN BACHMAN thus diving when within a few feet of a quantity of floating rice-chaff, in one of the tide-ponds in the neighbourhood of Charleston. Like the Common Goose, it invariably depresses its head while swimming under a low bridge, or a branch or trunk of a tree hanging over the water. When it swims beneath the surface of the water, it spreads its wings partially, but does not employ them as a means of propulsion, and keeps its tail always considerably expanded, using the feet as paddles either simultaneously or alternately.

The quantity of fish consumed by this bird is astonishing; and what I am about to relate on this subject will appear equally so. One morning Dr. BACHMAN and I gave to an Anhinga a Black Fish, measuring nine and a half inches, by two inches in diameter; and although the head of the fish was considerably larger than its body, and its strong and spinous fins appeared formidable, the bird, which was then about seven months old, swallowed it entire, head foremost. It was in appearance digested in an hour and a half,



when the bird swallowed three others of somewhat smaller size. At another time, we placed before it a number of fishes about seven and a half inches long, of which it swallowed nine in succession. It would devour at a meal forty or more fishes about three inches and a half long. On several occasions it was fed on Plaice, when it swallowed some that were four inches broad, extending its throat, and compressing them during their descent into the stomach. It did not appear to relish eels, as it eat all the other sorts first, and kept them to the last; and after having swallowed them, it had great difficulty in keeping them down, but, although for awhile thwarted, it would renew its efforts, and at length master them. When taken to the tide-pond at the foot of my friend's garden, it would now and then after diving return to the surface of the water with a cray-fish in its mouth, which it pressed hard and dashed about in its bill, evidently for the purpose of maiming it, before it would attempt to swallow it, and it never caught a fish without bringing it up to subject it to the same operation.

While residing near Bayou Sara, in the State of Mississippi, I was in the habit of occasionally visiting some acquaintances residing at Pointe Coupé, nearly opposite the mouth of the bayou. One day, on entering the house of an humble settler close on the western bank of the Mississippi, I observed two young Anhingas that had been taken out of a nest containing four, which had been built on a high cypress in a lake on the eastern side of the river. They were perfectly tame and gentle, and much attached to their foster-parents, the man and woman of the house, whom they followed wherever they went. They fed with equal willingness on shrimps and fish, and when neither could be had, contented themselves with boiled Indian corn, of which they caught with great ease the grains as they were thrown one by one to them. I was afterwards informed, that when a year old, they were allowed to go to the river and fish for themselves, or to the ponds on either side, and that they regularly returned towards night for the purpose of roosting on the top of the house. Both birds were males, and in time they fought hard battles, but at last each met with a female, which it enticed to the roost on the house-top, where all the four slept at night for awhile. Soon after, the females having probably laid their eggs in the woods, they all disappeared, and were never again seen by the persons who related this curious affair.

The Anhinga moves along the branches of trees rather awkwardly; but still it walks there, with the aid of its wings, which it extends for that purpose, and not unfrequently also using its bill in the manner of a Parrot. On the land, it walks and even runs with considerable ease, certainly with more expertness than the Cormorant, though much in the same style. But it does not employ its tail to aid it, for, on the contrary, it carries that organ inclined upwards, and during its progress from one place to another, the



movements of its head and neck are continued. These movements, which, as I have said, resemble sudden jerkings of the parts to their full extent, become extremely graceful during the love season, when they are reduced to gentle curvatures. I must not forget to say, that during all these movements, the gular pouch is distended, and the bird emits rough guttural sounds. If they are courting on wing, however, in the manner of Cormorants, Hawks, and many other birds, they emit a whistling note, somewhat resembling that of some of our rapacious birds, and which may be expressed by the syllables *eeek, eeek, eeek*, the first loudest, and the rest diminishing in strength. When they are on the water, their call-notes so much resemble the rough grunting cries of the Florida Cormorant, that I have often mistaken them for the latter.

The flight of the Anhinga is swift, and at times well sustained; but like the Cormorants, it has the habit of spreading its wings and tail before it leaves its perch or the surface of the water, thus frequently affording the sportsman a good opportunity of shooting it. When once on wing, they can rise to a vast height, in beautiful gyrations, varied during the love-season by zigzag lines chiefly performed by the male, as he plays around his beloved. At times they quite disappear from the gaze, lost as it were, in the upper regions of the air; and at other times, when much lower, seem to remain suspended in the same spot for several seconds. All this while, and indeed as long as they are flying, their wings are directly extended, their neck stretched to its full length, their tail more or less spread according to the movements to be performed, being closed when they descend, expanded and declined to either side when they mount. During their migratory expeditions, they beat their wings at times in the manner of the Cormorant, and at other times sail like the Turkey Buzzard and some Hawks, the former mode being more frequently observed when they are passing over an extent of woodland, the latter when over a sheet of water. If disturbed or alarmed, they fly with continuous beats of the wings, and proceed with great velocity. As they find difficulty in leaving their perch without previously expanding their wings, they are also, when about to alight, obliged to use them in supporting their body, until their feet have taken a sufficient hold of the branch on which they desire to settle. In this respect, they exactly resemble the Florida Cormorant.

The nest of the Snake-bird is variously placed in different localities; sometimes in low bushes, and even on the common smilax, not more than eight or ten feet above the water, if the place be secluded, or on the lower or top branches of the highest trees, but always over the water. In Louisiana and the State of Mississippi, where I have seen a goodly number of nests, they were generally placed on very large and tall cypresses, growing out of the central parts of lakes and ponds, or overhanging the borders of



lagoons, bayous, or rivers, distant from inhabited places. They are frequently placed singly, but at times amidst hundreds or even thousands of nests of several species of Herons, especially *Ardea alba* and *A. Herodias*, the Great White and Great Blue Herons. As however in all cases the form, size, and component materials are nearly the same, I will here describe a nest procured for the purpose by my friend BACHMAN.

It measured fully two feet in diameter, and was of a flattened form, much resembling that of the Florida Cormorant. The first or bottom layer was made of dry sticks of different sizes, some nearly half an inch in diameter, laid crosswise, but in a circular manner. Green branches with leaves on them, of the common myrtle, *Myrica cerifera*, a quantity of Spanish moss, and some slender roots, formed the upper and inside layer, which was as solid and compact as that of any nest of the Heron tribe. This nest contained four eggs; another examined on the same day had four young birds; a third only three; and in no instance has a nest of the Anhinga been found with either eight eggs, or "two eggs and six young ones," as mentioned by Mr. ABBOTT, of Georgia, in his notes transmitted to WILSON. Mr. ABBOTT is however correct in saying that this species "will occupy the same tree for a series of years," and I have myself known a pair to breed in the same nest three seasons, augmenting and repairing in every succeeding spring, as Cormorants and Herons are wont to do. The eggs average two inches and five-eighths in length, by one and a quarter in diameter, and are of an elongated oval form, of a dull uniform whitish colour externally, being covered with a chalky substance, beneath which the shell, on being carefully scraped, is of a light blue, precisely resembling in this respect the eggs of the different species of American Cormorants with which I am acquainted.

The young when about a fortnight old are clad with a uniform buff-coloured down; their bill is black, their feet yellowish-white, their head and neck nearly naked; and now they resemble young Cormorants, though of a different colour. The wing feathers make their appearance through the down, and are dark brown. The birds in the same nest differ as much in size as those of Cormorants, the largest being almost twice the size of the smallest. At this age they are in the habit of raising themselves by placing their bills on the upper part of the nest, or over a branch if convenient, and drawing themselves up by their jaws, which on such occasions they open very widely. This habit is continued by young birds whilst in confinement, and was also observed in the Cormorant, *Phalacrocorax Carbo*, the young of which assisted themselves with their bills while crawling about on the deck of the Ripley. The action is indeed performed by the Anhinga at all periods of its life. At an early age the young utter a low wheezing call, and at times some cries resembling those of the young of the smaller species



of Herons. From birth they are fed by regurgitation, which one might suppose an irksome task to the parent birds, as during the act they open their wings and raise their tails. I have not been able to ascertain the period of incubation, but am sure that the male and the female sit alternately, the latter however remaining much longer on the nest. Young Anhingas when approached while in the nest cling tenaciously to it, until seized, and if thrown down, they merely float on the water, and are easily captured.

When they are three weeks old, the quills and tail-feathers grow rapidly, but continue of the same dark-brown colour, and so remain until they are able to fly, when they leave the nest, although they still present a singular motley appearance, the breast and back being buff-coloured, while the wings and tail are nearly black. After the feathers of the wings and tail are nearly fully developed, those of the sides of the body and breast become visible through the down, and the bird appears more curiously mottled than before. The young male now assumes the colour of the adult female, which it retains until the beginning of October, when the breast becomes streaked with dusky; white spots shew themselves on the back, the black of which becomes more intense, and the crimpings on the two middle feathers of the tail, which have been more or less apparent from the first, are now perfect. By the middle of February, the male is in full plumage, but the eyes have not yet acquired their full colour, being only of a dull reddish-orange. In this respect also two differences are observed between the Anhinga and the Cormorants. The first is the rapid progress of the Anhinga towards maturity of plumage, the other the retaining of its complete dress through the whole of its life, no change taking place in its colours at each successive moult. The Cormorants, on the contrary, take three or four years to attain their full dress of the love season, which lasts only during that period of excitement. The progress of the plumage in the female Anhinga is as rapid as in the male, and the tints also remain unaltered through each successive moult.

Like all other carnivorous and piscivorous birds, the Anhinga can remain days and nights without food, apparently without being much incommoded. When overtaken on being wounded, and especially if brought to the ground, it seems to regard its enemies without fear. On several occasions of this kind, I have seen it watch my approach, or that of my dog, standing as erect as it could under the pain of its wounds, with its head drawn back, its bill open, and its throat swelled with anger until, when at a sure distance, it would dart its head forward and give a severe wound. One which had thus struck at my dog's nose, hung to it until dragged to my feet over a space of thirty paces. When seized by the neck, they scratch severely with their



sharp claws, and beat their wings about you with much more vigour than you would suppose they could possess.

The substances which I have found in many individuals of this species were fishes of various kinds, aquatic insects, crays, leeches, shrimps, tadpoles, eggs of frogs, water-lizards, young alligators, water-snakes, and small terrapins. I never observed any sand or gravel in the stomach. On some occasions I found it distended to the utmost, and, as I have already stated, the bird has great powers of digestion. Its excrements are voided in a liquid state, and squirted to a considerable distance, as in Cormorants, Hawks, and all birds of prey.

The flesh of the Anhinga, after the bird is grown, is dark, firm, oily, and unfit for food, with the exception of the smaller pectoral muscles of the female, which are white and delicate. The crimpings of the two middle tail-feathers become more deeply marked during the breeding season, especially in the male. When young, the female shews them only in a slight degree, and never has them so decided as the male.

PLOTUS ANHINGA, Bonap. Syn., p. 411.

BLACK-BELLIED DARTER, *Plotus melanogaster*, Wils. Amer. Orn., vol. ix. p. 75.

BLACK-BELLIED DARTER, Nutt. Man., vol. ii. p. 507.

ANHINGA OR SNAKE-BIRD, *Plotus Anhinga*, Aud. Orn. Biog., vol. iv. p. 136.

Male, 35 $\frac{3}{4}$ , 44. Female, 34, 43.

Constant resident from Florida to Georgia; in summer as far east as North Carolina, and up the Mississippi to Natchez. Common.

Adult Male.

Bill about twice the length of the head, almost straight, being very slightly recurved, rather slender, compressed, tapering to a fine point. Upper mandible with the dorsal outline slightly declinate, and almost straight, being however somewhat convex, the ridge convex, gradually narrowed, the sides sloping, the edges sharp, and beyond the middle cut into minute slender-pointed serratures, which are directed backwards; the tips very slender. Lower mandible with the angle very long and narrow, the dorsal line beyond it straight and ascending, the sides sloping slightly outwards, the edges sharp and serrated like those of the upper, the point extremely narrow; the gap line slightly ascending towards the end. No external nostrils.

Head very small, oblong. Neck very long and slender. Body elongated and slender. Feet very short and stout. Tibia feathered to the joint. Tarsus very short, roundish, reticulated all over, the scales on the hind part extremely small. Toes all connected by webs; the first of moderate length, the second much longer, the fourth longest and slightly margined externally;



the first toe, and the first phalanges of the rest, covered above with transverse series of scales, the rest of their extent scutellate. Claws rather large, very strong, compressed, curved, very acute; the outer smallest, the third longest, with a deep groove on the inner side, and a narrow thin edge, cut with parallel slits; those of the first and second toes nearly equal.

There is a bare space at the base of the upper mandible, including the eye; the skin of the throat is bare and dilated, like that of the Cormorants. The plumage of the head, neck, and body, is close, blended, and of a silky texture; the feathers oblong, rounded, with the filament disunited toward the end. On each side of the neck, from near the eye to half its length, is a series of elongated narrow loose feathers, a few of which are also dispersed over the back of the neck, and which in the breeding season are an inch and a quarter in length. The scapulars, which are very numerous, are elongated, lanceolate, tapering to a point, compact, stiffish, elastic, highly glossed, gradually increasing in size backwards, the outer web of the largest crimped. Wings of moderate length and breadth; primaries strong, firm, considerably curved, the third longest, the second almost as long, the first a little shorter than the fourth; the second, third, and fourth cut out on the outer web. Secondaries a little decurved, broad, rounded and acuminate; the inner elongated, straightish, acuminate, and resembling the posterior scapulars. Tail very long, narrow, of twelve straight feathers having strong shafts, and increasing in breadth from the base to the end, which is rounded and very broad, the two middle feathers have their outer webs curiously marked with transverse alternate ridges and depressions.

Upper mandible dusky olive, the edges yellow; lower mandible bright yellow, the edges and tips greenish; bare space about the eye bluish-green; gular sac bright orange. Iris bright carmine. Tarsi and toes anteriorly dusky olive, the hind parts and webs yellow; claws brownish-black. The general colour of the head, neck, and body, is glossy blackish-green; of the scapulars, wings, and tail, glossy bluish-black. The long loose feathers on the neck are purplish-white or pale lilac. The lower part of the neck behind is marked with very numerous minute oblong spots of white; which form two broad bands extending backwards, and gradually becoming more elongated, there being one along the centre of each feather including the scapulars. The smaller wing-coverts are similarly marked with broader white spots disposed in regular rows; the four last of which have merely a central line towards the tip, while the inner has a broad band extending from near the base over the outer half of the inner web, and towards the end including a portion of the outer web; the first row of small coverts and the secondary coverts are white, excepting the portion of the inner web. The five inner elongated secondaries are marked with a narrow white band,



occupying the inner half of the outer web, from about an inch from their base to the extremity, near which it includes a part of the inner web. The tail-feathers tipped with a band of brownish-red, fading into white.

Length to end of tail  $35\frac{3}{4}$  inches, to end of wings  $30\frac{1}{4}$ , to end of claws  $28\frac{1}{2}$ , to carpus  $17\frac{1}{2}$ ; extent of wings 44; wing from flexure 14; tail  $11\frac{1}{2}$ ; bill along the ridge  $3\frac{1}{4}$ , along the edge of lower mandible  $3\frac{1}{2}$ ; tarsus  $1\frac{4}{12}$ ; hind toe  $\frac{1}{12}$ , its claw  $\frac{6}{12}$ ; second toe  $1\frac{9}{12}$ , its claw  $\frac{5\frac{1}{2}}{12}$ ; third toe  $2\frac{5}{12}$ , its claw  $\frac{8}{12}$ ; fourth toe  $2\frac{4\frac{1}{2}}{12}$ , its claw  $\frac{5\frac{3}{4}}{12}$ . Weight  $3\frac{1}{4}$  lbs.

#### Adult Female.

The female has the plumage similar in texture to that of the male, but only a few inconspicuous elongated feathers on the neck. The bill is lighter than in the male, the naked part around the eye darker, the eye and gular sac as in the male; as are the feet. The upper part of the head and the hind neck are dull greenish-brown, lighter at the lower part, the fore part of the neck is pale reddish-brown, tinged with grey, lighter on the throat; this colour extends over part of the breast, an inch and a half beyond the carpal joint, and terminates abruptly in a transverse band of deep reddish-chestnut; the rest of the lower parts as in the male, as are the upper, only the fore part of the back is tinged with brown, and its spots less distinct.

Length to end of tail 34 inches, to end of wings  $29\frac{1}{4}$ , to end of claws  $27\frac{1}{2}$ ; to carpal joint  $16\frac{1}{4}$ ; extent of wings 43. Weight 2 lbs. 15 oz.

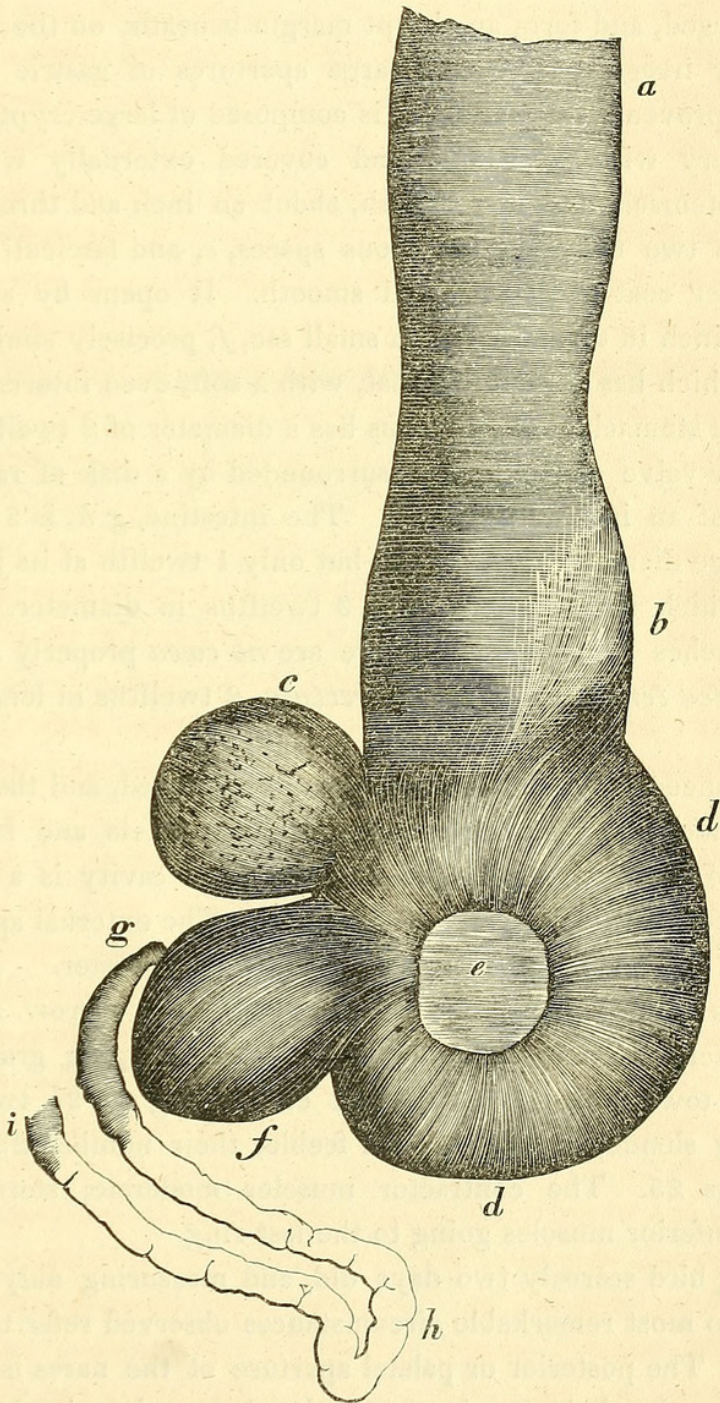
In external appearance and habits the Snake-bird is very nearly allied to the Cormorants. The structure of the feet is essentially the same in both genera, as is that of the wings and tail, the latter however being more elongated in the Anhinga, in correspondence with the neck. If one might suppose a small Cormorant elongated and attenuated, with the feet rather enlarged but shortened, the head diminished in size, and the bill formed more on the model of that of a Heron, being destitute of the distinct ridge and curved unguis, he would form a pretty correct notion of this bird. Not only is the bill like that of a Heron, but the vertebræ of the neck are very similar to those of that family, and form the same abrupt curvatures between the seventh and eighth vertebræ. But all the other bones are those of the Cormorants and Pelicans. The sternum in particular is almost precisely similar to that of the Crested Cormorant, so that without entering very minutely into its description, no differences could be pointed out.

Both mandibles are concave within; the palate flat, with two longitudinal ridges; the posterior aperture of the nares linear and 9 twelfths long, the anterior or external aperture *entirely obliterated*. The lower mandible has a distinct oblique joint at about a third of its length, enabling it to be expanded to the extent of an inch and a half. The pouch, which is small, is constructed in the same manner as that of the Pelicans and Cormorants; its



muscular fibres running from the lower edge of the mandible downwards and backwards, and a slender muscle passing from the anterior part of the hyoid bone to the junction of the crura of the mandible. The tongue is reduced to a mere oblong knob,  $1\frac{1}{2}$  twelfths long, and  $\frac{1}{2}$  twelfth in height. The aperture of the glottis is 3 twelfths long, with two roundish thin edged flaps behind, destitute of papillæ. There is a small bone appended to the occipital ridge,  $\frac{1}{4}$  inch in length, as in the Cormorants.

The œsophagus *a b*, is 17 inches long, exceedingly delicate and dilatable,





with external longitudinal fibres, the transverse fibres becoming stronger towards the lower parts. Its diameter when moderately dilated is  $1\frac{3}{4}$  inches at the top, 1 inch farther down, at its entrance into the thorax, 9 twelfths, and finally  $1\frac{1}{2}$  inches; but it may be dilated to a much greater extent. *The proventricular glands, instead of forming a belt at the lower part of the œsophagus, are placed on the right side in the form of a globular sac,* about an inch in diameter, communicating with the œsophagus, *b*, and stomach, *d*. For two inches of the lower part of the œsophagus, *b*, or at that part usually occupied by the proventriculus, the transverse muscular fibres are enlarged, and form an abrupt margin beneath; on the inner surface there are four irregular series of large apertures of gastric glandules or crypts. The proventriculus itself, *c*, is composed of large crypts of irregular form, with very wide apertures, and covered externally with muscular fibres. The stomach, *d d*, is roundish, about an inch and three quarters in diameter, with two roundish tendinous spaces, *e*, and fasciculi of muscular fibres; its inner coat thin, soft, and smooth. It opens by an aperture a quarter of an inch in diameter into a small sac, *f*, precisely similar to that of the Pelican, which has a muscular coat, with a soft, even internal membrane, like that of the stomach. The pylorus has a diameter of 2 twelfths, is closed by a semilunar valve or flap, and is surrounded by a disk of radiating rugæ three-fourths of an inch in diameter. The intestine, *g h*, is 3 feet 4 inches long, its average diameter  $2\frac{1}{4}$  twelfths, but only 1 twelfth at its junction with the rectum, which is  $3\frac{1}{2}$  inches long, 3 twelfths in diameter. The cloaca globular,  $1\frac{1}{2}$  inches in diameter. There are *no cæca* properly so called, but a *small rounded termination of the rectum*, 2 twelfths in length, as in the Herons.

The subcutaneous cellular tissue is largely developed, and the longitudinal cells on the neck are extremely large, as in Gannets and Herons. The olfactory nerve is of moderate size, and the nasal cavity is a simple compressed sac 4 twelfths in its greatest diameter. The external aperture at the ear is circular, and not more than half a twelfth in diameter.

The trachea is  $13\frac{1}{2}$  inches long, much flattened, narrow at the upper extremity, where it is  $2\frac{1}{2}$  twelfths in breadth, enlarging gradually to  $4\frac{1}{2}$  twelfths, and toward the lower larynx contracting to  $2\frac{1}{2}$  twelfths. The rings are very slender, unossified, and feeble; their number 230; the bronchial half-rings 25. The contractor muscles moderate; sterno-tracheales; and a pair of inferior muscles going to the last ring.

In a young bird scarcely two days old, and measuring only  $3\frac{3}{4}$  inches in length, the two most remarkable circumstances observed refer to the nostrils and stomach. The posterior or palatal aperture of the nares is of the same form, and proportional size, as in the adult; the nasal cavity is similar; but



there is an external nasal aperture, or nostril, on each side, so small as merely to admit the mystachial bristle of a Common Squirrel. The stomach is of enormous size, occupying three-fourths of the cavity of the thorax and abdomen, being 10 twelfths of an inch long, and of an oval shape. The proventriculus is separated from the stomach and formed into a roundish lobe, as in the old bird; and beside it is the lobe or pouch appended to the stomach, and from which the duodenum comes off. Even at this very early age, the stomach was turgid with a pultaceous mass apparently composed of macerated fish, without any bones or other hard substances intermixed.

END OF THE SIXTH VOLUME.





W.H.

*Townsend's Cormorant.*

*Male.*

*Drawn from Nature by J. J. Audubon, F.R.S. F.L.S.*

*Lith. Printed & Col<sup>d</sup> by J. T. Bowen, Phila.*





Audubon, John James. 1843. "American Anhinga or Snake-Bird, *Plotus anhinga*, Linn. [Pl. 420]." *The birds of America : from drawings made in the United States and their territories* 6, 443–457. <https://doi.org/10.5962/p.319533>.

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