THE FRIGATE PELICAN.—MAN-OF-WAR-BIRD.

†TACHYPETES AQUILUS, *Linn.*

PLATE CCCCXXI.—ADULT.

Previous to my visit to the Florida Keys, I had seen but few Frigate-birds, and those only at some distance, while I was on the Gulf of Mexico, so that I could merely recognise them by their mode of flight. On approaching Indian Key, however, I observed several of them, and as I proceeded farther south, their numbers rapidly increased; but on the Tortugas very few were observed. This bird rarely travels farther eastward than the Bay of Charleston in South Carolina, although it is abundant at all seasons from Cape Florida to Cape Sable, the two extreme points of the peninsula. How far south it may be found I cannot tell.

The Frigate Pelicans may be said to be as gregarious as our Vultures. You see them in small or large flocks, according to circumstances. Like our Vultures, they spend the greater part of the day on wing, searching for food; and like them also, when gorged or roosting, they collect in large flocks, either to fan themselves or to sleep close together. They are equally lazy, tyrannical, and rapacious, domineering over birds weaker than themselves, and devouring the young of every species, whenever an opportunity offers, in the absence of the parents; in a word, they are most truly Marine Vultures.

About the middle of May, a period which to me appeared very late for birds found in so warm a climate as that of the Florida Keys, the Frigate Pelicans assemble in flocks of from fifty to five hundred pairs or more. They are seen flying at a great height over the islands on which they have bred many previous seasons, courting for hours together; after which they return towards the mangroves, alight on them, and at once begin to repair the old nests or construct new ones. They pillage each other's nests of their materials, and make excursions for more to the nearest keys. They break the dry twigs of trees with ease, passing swiftly on wing, and snapping them off by a single grasp of their powerful bill. It is indeed a beautiful sight to see them when thus occupied, especially when several are so engaged, passing and repassing with the swiftness of thought over the trees whose tops are blasted; their purpose appears as if accomplished by magic.

Frigate Pelican Man of War Bird.

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

Male

Lith. Printed & Col^d by J. Bowen. Philad^a

I know only two other birds that perform the same action: one of them is the Forked-tail Hawk, the other our swift or Chimney Swallow; but neither of them is so expert as the Frigate Pelican. It sometimes happens that this bird accidentally drops a stick while travelling towards its nest, when, if this should happen over the water, it plunges after it and seizes it with its bill before it has reached the waves.

The nests are usually placed on the south side of the keys, and on such trees as hang over the water, some low, others high, several in a single tree, or only one, according to the size of the mangrove, but in some cases lining the whole side of the island. They are composed of sticks crossing each other to the height of about two inches, and are flattish, but not very large. When the birds are incubating, their long wings and tail are seen extending beyond the nest for more than a foot. The eggs are two or three, more frequently the latter number, measure two inches and seven-eighths in length, two in breadth, being thus of a rather elongated form, and have a thick smooth shell, of a greenish-white colour, frequently soiled by the filth of the nests. The young are covered with yellowish-white down, and look at first as if they had no feet. They are fed by regurgitation, but grow tardily, and do not leave the nest until they are able to follow their parents on wing.

At that period the plumage of the young females is marbled with grey and brown, with the exception of the head and the lower parts, which are white. The tail is about half the length it attains at the first moult, and is brownish-black, as are the primaries. After the first change of plumage, the wings become longer, and their flight is almost as elegant and firm as that of older birds.

The second spring plumage of this sex is brownish-black on the upper parts, that colour extending over the head and around the neck in irregular patches of brown, continued in a sharp angle towards the breast, but separated on its sides by the white that ascends on either side of the neck towards the head. The lower tail-coverts are brownish-black, as are the lower parts of the belly and flanks; the shoulders alone remaining as at first. The tail and wings are perfect.

The third spring, the upper parts of the head and neck are of a purer brownish-black, which extends down to the extremity of the angle, as are the feathers of the belly and the lower tail-coverts, the dark colour reaching now to within five inches of the angle on the breast. The white of the intermediate space has become much purer; here and there light tints of bronze appear; the feet, which at first were dull yellow, have become of a rich reddish-orange, and the bill is pale blue. The bird is now capable of

breeding, although its full plumage is not obtained until the next moult, when the colours become glossy above, and the white of the breast pure.

The changes which the males undergo are less remarkable. They are at first, when fully fledged, entirely of the colour seen on the upper parts of the young females; and the tint is merely improved afterwards, becoming of a deeper brownish-black, and acquiring purer reflections of green, purple and bronze, which in certain lights are seen on every part of the head, neck and body, and in very old males on the wings and tail. They also commence breeding the third spring. But I now return to the habits of this interesting bird.

The Frigate Pelican is possessed of a power of flight which I conceive superior to that of perhaps any other bird. However swiftly the Cayenne Tern, the smaller Gulls or the Jager move on wing, it seems a matter of mere sport to it to overtake any of them. The Goshawk, the Peregrine, and the Gyr Falcon, which I conceive to be the swiftest of our Hawks, are obliged to pursue their victim, should it be a Green-winged Teal or Passenger Pigeon, at times for half a mile, at the highest pitch of their speed, before they can secure them. The bird of which I speak comes from on high with the velocity of a meteor, and on nearing the object of its pursuit, which its keen eye has spied while fishing at a distance, darts on either side to cut off all retreat, and with open bill forces it to drop or disgorge the fish which it has just caught. See him now! Yonder, over the waves leaps the brilliant dolphin, as he pursues the flying-fishes, which he expects to seize the moment they drop into the water. The Frigate-bird, who has marked them, closes his wings, dives toward them, and now ascending, holds one of the tiny things across his bill. Already fifty yards above the sea, he spies a porpoise in full chase, launches towards the spot, and in passing seizes the mullet that had escaped from its dreaded foe; but now, having obtained a fish too large for his gullet, he rises, munching it all the while, as if bound for the skies. Three or four of his own tribe have watched him and observed his success. They shoot towards him on broadly extended pinions, rise in wide circles, smoothly, yet as swiftly as himself. They are now all at the same height, and each as it overtakes him, lashes him with its wings, and tugs at his prey. See! one has fairly robbed him, but before he can secure the contested fish it drops. One of the other birds has caught it, but he is pursued by all. From bill to bill, and through the air, rapidly falls the fish, until it drops quite dead on the waters, and sinks into the deep. Whatever disappointment the hungry birds feel, they seem to deserve it all.

Sights like these you may every day see, if you take ship and sail for the Florida Keys. I have more to tell you, however, and of things that to me were equally pleasing. While standing in the cool veranda of Major GLAS-

SEL of the United States army, at Key West, I observed a Frigate Pelican that had forced a Cayenne Tern, yet in sight, to drop a fish, which the broad-winged warrior had seized as it fell. This fish was rather large for the Tern, and might probably be about eight inches in length. The Frigate Pelican mounted with it across his bill about a hundred yards, and then tossing it up caught it as it fell, but not in the proper manner. He therefore dropped it, but before it had fallen many yards, caught it again. Still it was not in a good position, the weight of the head, it seemed, having prevented the bird from seizing it by that part. A second time the fish was thrown upwards, and now at last was received in a convenient manner, that is, with its head downwards, and immediately swallowed.

When the morning light gladdens the face of nature, and while the warblers are yet waiting in silence the first rays of the sun, whose appearance they will hail with songs of joy, the Frigate-bird, on extended pinions, sails from his roosting place. Slowly and gently, with retracted neck he glides, as if desirous of quietly trying the renovated strength of his wings. Toward the vast deep he moves, rising apace, and before any other bird views the bright orb emerging from the waters. Pure is the azure of the heavens, and rich the deep green of the smooth sea below; there is every prospect of the finest weather; and now the glad bird shakes his pinions; and far up into the air, far beyond the reach of man's unaided eye, he soars in his quiet but rapid flight. There he floats in the pure air, but thither can fancy alone follow him. Would that I could accompany him! But now I see him again, with half-closed wings, gently falling towards the sea. He pauses awhile, and again dives through the air. Thrice, four times, has he gradually approached the surface of the ocean; now he shakes his pinions as violently as the swordsman whirls his claymore; all is right; and he sweeps away, shooting to this side and that, in search of prey.

Mid-day has arrived, and threatening clouds obscure the horizon; the breeze, ere felt, ruffles the waters around; a thick mist advances over the deep; the sky darkens, and as the angry blasts curl the waves, the thunder mutters afar; all nature is involved in gloom, and all is in confusion, save only the Man-of-war-bird, who gallantly meets the gale. If he cannot force his way against the storm, he keeps his ground, balancing himself like a Hawk watching his prey beneath; but now the tempest rages, and rising obliquely, he shoots away, and ere long surmounts the tumultuous clouds, entering a region calm and serene, where he floats secure until the world below has resumed its tranquillity.

I have frequently observed the Frigate-bird scratch its head with its feet while on wing; and this happening one day, when the bird fell through the air, as it is accustomed to do at such times, until it came within shot, I killed

it when almost over my head, and immediately picked it up. I had been for years anxious to know what might be the use of the pectinated claws of birds; and on examining both its feet with a glass, I found the racks crammed with insects, such as occur on the bird's head, and especially around the ears. I also observed that the pectinated claws of birds of this species were much longer, flatter, and more comb-like than those of any other species with which I am acquainted. I now therefore feel convinced, that, however useful this instrument may be on other occasions, it is certainly employed in cleansing parts of the skin of birds which cannot be reached by the bill.

At times these birds may be seen chasing and jostling each other as if engaged in a frolic, after which they bear away on extended wings, and fly in a direct course until out of sight. But although their flight is easy and powerful, in a degree not surpassed by any other bird, they move with great difficulty on the ground. They can rise, however, from a sand-bar, no matter how low and level it may be. At such times, as well as when sitting on the water, which it occasionally does, the bird raises its wings almost perpendicularly, spreads its tail half erect, and at the first flap of the former, and simultaneous stroke of the latter, on the ground or the water, bounces away. Its feet, however, are of little service beyond what I have mentioned, and the supporting of its body when it has alighted on a branch, on which it rarely stands very erect, although it moves sideways on it, as Parrots sometimes do. It never dives, its bill in form resembling that of the Cormorants, which also never plunge from on wing in pursuit of fish, and only dip into the water when dropping from a perch or a rock to escape danger, as the Anhingas and some other birds are also accustomed to do.

When the Frigate Pelican is in want of a dead fish, a crab, or any floating garbage suited to its appetite, it approaches the water in the manner of Gulls, holding its wings high, and beating them until the bill has performed its duty, which being accomplished, the bird immediately rises in the air and devours its prey.

These birds see well at night, although they never go to sea excepting by day. At various times I have accidentally sailed by mangrove keys on which hundreds were roosted, and apparently sound asleep, when, on my firing a gun for the purpose of starting whatever birds might be there, they would all take to wing and sail as beautifully as during day, returning to the trees as the boats proceeded. They are by no means shy; indeed they seem unaware of danger from a gun, and rarely all go off when a party is shooting at them, until a considerable number has been obtained. The only difficulty I experienced in procuring them was on account of the height to which they so soon rose on leaving the trees; but we had excellent guns, and our worthy

pilot's "Long Tom" distinguished itself above the rest. At one place, where we found many hundreds of them, they sailed for nearly half an hour over our heads, and about thirty were shot, some of them at a remarkable height, when we could hear the shot strike them, and when, as they fell to the water, the sound of their great wings whirling through the air resembled that produced by a sail flapping during a calm. When shot at and touched ever so slightly, they disgorge their food in the manner of Vultures, Gulls and some Terns; and if they have fallen and are approached, they continue to vomit the contents of their stomach, which at times are extremely putrid and nauseous. When seized, they evince little disposition to defend themselves, although ever so slightly wounded, but struggle and beat themselves until killed. Should you, however, place your fingers within their open bill, you might not withdraw them scatheless.

They are extremely silent, and the only note which I heard them utter was a rough croaking one. They devour the young of the Brown Pelican when quite small, as well as those of other birds whose nests are flat and exposed during the absence of the parent birds; but their own young suffer in the same manner from the still more voracious Turkey Buzzard. The notion that the Frigate-bird forces the Pelicans and Boobies to disgorge their prey is erroneous. The Pelican, if attacked or pursued by this bird, could alight on the water or elsewhere, and by one stroke of its sharp and powerful bill destroy the rash aggressor. The Booby would in all probability thrust its strong and pointed bill against the assailant with equal success. The Cayenne Tern, and other species of that genus, as well as several small Gulls, all abundant on the Florida coasts, are its purveyors, and them it forces to disgorge or drop their prey. Those of the deep are the dolphins, porpoises, and occasionally the sharks. Their sight is wonderfully keen, and they now and then come down from a great height to pick up a dead fish only a few inches long floating on the water. Their flesh is tough, dark, and, as food, unfit for any other person than one in a state of starvation.

TACHYPETES AQUILUS, Bonap. Syn., p. 406.

FRIGATE PELICAN, Nutt. Man., vol. ii. p. 491.

FRIGATE PELICAN, *Tachypetes Aquilis*, Aud. Orn. Biog., vol. iii. p. 495; vol. v. p. 634.

Adult, 41, 86.

Resides constantly on and about the Florida Keys, where it breeds in vast numbers on trees. Ranges over the Gulf of Mexico, Bays of Texas, but rarely seen to the eastward of North Carolina.

Adult Male.

Bill much longer than the head, strong, broader than deep, excepting

towards the curved extremity, the edges irregularly jagged. Upper mandible with the dorsal line slightly concave, at the tip decurved, its ridge broad and nearly flat at the base, narrowed and more convex towards the end, the sides separated from the ridge by a narrow groove, convex, the edges sharp and inflected, with a prominence at the commencement of the curve of the elongated compressed hooked point. Nostrils basal, linear, inconspicuous. Lower mandible with the angle extremely long, narrow, the membrane bare and dilatable into a small pouch, the very short dorsal line decurved, the sides erect at the base, convex in the rest of their extent, the edges sharp and much inflected, at the narrow tip decurved.

Head of moderate size, oblong. Neck of moderate length, stout. Body rather slender. Feet very short, stout; tibia very short; tarsus extremely short, feathered; toes all placed in the same plane, and connected by short reticulated webs with concave margins, but running narrow along the sides; they are scutellate above, broad and papillate beneath; first toe small, second shorter than fourth, third much longer than the latter. Claws strong, compressed, curved, acute, that of middle toe long, obliquely flattened, and pectinate on the inner edge.

Eyelids and gular sac, with the anterior part of the neck, bare. Plumage compact, on the head, neck, breast, and back, shining. The feathers of the head, neck, and back are lanceolate and acuminate; of the breast and sides broader; of the wings small and rounded. Wings extremely long, pointed, the first quill longest, the rest rapidly diminishing; the secondaries very short, obliquely rounded and acuminate, the inner long and tapering. Tail very long, deeply forked, of twelve rounded feathers, the outer narrow and abruptly rounded.

Bill light purplish-blue, white in the middle, the curved tips dusky. Inside of mouth carmine; gular sac orange. Bare space about the eye purplish-blue; iris deep brown. Feet light carmine above, orange beneath. The general colour of the plumage is brownish-black, the head, neck, back, breast, and sides, splendid with green and purple reflections, the former predominating on the head, the latter on the back. The wings are tinged with grey, the inner secondaries and tail with brown; the shafts of the former black, of the latter brown.

I have observed in specimens which I considered to be very old, that the gular sac was covered with pustules, similar to those found at times around the base of the mandibles of the *Cathartes Aura*, and which appear to be the effects of disease, occasioned by their coming frequently in contact with putrid substances.

Length to end of tail 41 inches, to end of wings 37; to end of claws $24\frac{3}{4}$; wing from flexure 25, tail 18; extent of wings 86; bill along the back $5\frac{1}{2}$,

along the edge of lower mandible $5\frac{7}{12}$; tarsus $\frac{3}{4}$; middle toe $2\frac{1}{4}$, its claw $\frac{10}{12}$. Weight 3 lbs. 6 oz.

The Adult Female differs from the male in several respects. The former has the whole plumage dark-coloured, whereas the latter has a broad white space on the breast, that colour extending forwards along the sides of the neck, and encircling it about the middle. The feathers of the back are less elongated and pointed, and their lustre is much inferior to that of the male. The dark parts also are more tinged with brown, and most of the smaller wing-coverts are of the latter colour.

Male. As in the Gannets and Pelicans, the cells of the subcutaneous cellular tissue are extremely large and distensile. The mouth is very wide, its breadth being 1 inch 7 twelfths, opening to nearly beneath the posterior angle of the eye. The palate is convex, with two horny thin-edged ridges, and anteriorly a median ridge of the same kind extending to the tip. The posterior aperture of the nares is linear, $1\frac{1}{4}$ inches in length. The lower mandible is extremely narrow toward the end, and deeply grooved, with a kind of joint on each side near the base, rendering it capable of being extended to 2 inches 5 twelfths. The tongue is similar to that of the Pelicans, Gannets, and Cormorants, being exceedingly small, $7\frac{1}{2}$ twelfths in length, fleshy, flattened, $4\frac{1}{2}$ twelfths in breadth at the base, 2 twelfths at the middle, the tip obtuse. The nostrils, which are situated at the commencement of the groove on each side of the ridge, are so inconspicuous as to be with difficulty detected, being quite linear, $3\frac{1}{2}$ twelfths long, and covered above by a membranous edge. The aperture of the ear is of moderate size, 3 twelfths in width; that of the eye is $\frac{1}{2}$ inch.

The heart is of an ovate form, broader and rounder than usual, its length 1 inch $4\frac{1}{2}$ twelfths, its breadth 1 inch 2 twelfths. The lobes of the liver are very unequal, the right being 2 inches 1 twelfth long, the left 1 inch 5 twelfths; the gall-bladder oblong, 9 twelfths in length, 5 twelfths in breadth.

The œsophagus, *a b c*, is $11\frac{1}{2}$ inches long, at the commencement $2\frac{1}{2}$ inches in width, presently contracting to 1 inch 9 twelfths, at the lower part of the neck expanded to 2 inches, within the thorax 1 inch 4 twelfths; the proventriculus, *b c*, 1 inch 5 twelfths, its belt of glandules complete, 1 inch 2 twelfths in breadth, 7 prominent rugæ. The stomach, *c d*, is very small, roundish, 1 inch 4 twelfths in diameter, considerably compressed; its muscular coat very thin, consisting of a single series of fasciculi; the tendons circular, $\frac{1}{2}$ inch in diameter; its inner coat soft and corrugated, several of the proventricular rugæ running down upon it. The walls of the œsophagus are of moderate thickness, the external transverse fibres distinct, the inner coat longitudinally plaited. The stomach differs from that of all the other

Pelecaninæ in having no pyloric lobe. The duodenum also, *d e f*, does not at first pass forward, but directly curves round the stomach, returning at the distance of $2\frac{1}{2}$ inches, and the intestine, *d e f g h i*, is convoluted with 9 folds. It is 36 inches long, 5 twelfths wide in the duodenal portion, contracts to 3 twelfths; the cœca are two small knobs 2 twelfths long, $1\frac{1}{2}$ twelfths in breadth; the rectum 3 inches long, for 1 inch 8 twelfths its width is $3\frac{1}{2}$ twelfths, the remaining part forming a globular cloaca $1\frac{1}{2}$ inches in diameter.

The trachea is $8\frac{1}{2}$ inches long, its width at the commencement $4\frac{1}{2}$ twelfths, presently after 4 twelfths, contracting to $3\frac{3}{4}$ twelfths. It is a little flattened: the rings 112, cartilaginous. The inferior larynx is greatly expanded antero-posteriorly, and the first dimidiate ring is 5 twelfths in extent, with a somewhat smaller ring beyond it. The lateral muscles are very slender; the sterno-tracheal, which passes off at the distance of $\frac{1}{2}$ inch from the bifurcation, is strong; there is a slender slip on each

side going to the bronchial membrane. The bronchi are wide, and formed of 20 half rings.

The sternum is extremely singular, on account of its great width and concavity, compared with its length; the latter being only $2\frac{1}{4}$ inches, while the breadth at the anterior costal processes is $2\frac{1}{2}$ inches. The crest is thus extremely short, but of considerable height, its most prominent part being $10\frac{1}{2}$ twelfths. The coracoid bones are remarkably large, and so firmly fixed in the joint as to have just the slightest perceptible motion. The furcula is also very large and wide, of the form of the letter U, its crura at their union forming a large mass of solid bone, continuous with the crest of the sternum. The posterior edge of the sternum has a very slight sinus on each side.

Now, in this bird, which is confessed to be inferior to none in its power of flight, the sternal crest is not nearly so prominent as that of a Grouse or Partridge, so that the supposed indication which this part affords of vigorous flight is evidently fallacious. The sternum, although much shorter, resembles that of the Pelicans, Cormorants, and Anhingas, as well as in a less degree that of the Gannets.

GENUS IV.—PELECANUS, *Linn.* PELICAN.

Bill about thrice the length of the head, rather slender, almost straight, depressed; upper mandible linear, depressed, convex at the base, gradually flattened, and a little enlarged to near the end, when it narrows, and terminates in a hooked point; ridge broad and convex at the base, gradually narrowed and flattened beyond the middle, separated by a groove from the sides, erect at the base, sloping towards the edges, edges very acute, with an internal groove; lower mandible with the angle excessively long, extending to the unguis, the sides erect and convex, the edges thin and involute, the tip decurved. Nostrils basal, lateral, linear, concealed by the wrinkles of the skin. Head small, oblong; neck long, stout; body full, rather flattened. Feet short, and very stout; tarsus short, compressed, covered all round with hexagonal scales; toes in the same plane, all connected by webs, first shortest, fourth longer than third. Claws short, strong, curved, that of the third

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Male

Lith. Printed & Col^d by J. Bowen. Philad^a

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