

enlarged into a crop; proventriculus elliptical; stomach a very muscular, transversely elliptical gizzard, exactly resembling that of a Goose or Duck, with the epithelium dense, and longitudinally sulcate; intestine very long, and of considerable width; cœca rather long; cloaca globular.

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## AMERICAN FLAMINGO.

+*PHŒNICOPTERUS RUBER*, *Linn.*

PLATE CCCLXXV.—ADULT MALE.

On the 7th of May, 1832, while sailing from Indian Key, one of the numerous islets that skirt the south-eastern coast of the Peninsula of Florida, I for the first time saw a flock of Flamingoes. It was on the afternoon of one of those sultry days which, in that portion of the country, exhibit towards evening the most glorious effulgence that can be conceived. The sun, now far advanced toward the horizon, still shone with full splendour, the ocean around glittered in its quiet beauty, and the light fleecy clouds that here and there spotted the heavens, seemed flakes of snow margined with gold. Our bark was propelled almost as if by magic, for scarcely was a ripple raised by her bows as we moved in silence. Far away to seaward we spied a flock of Flamingoes advancing in "Indian line," with well-spread wings, outstretched necks, and long legs directed backwards. Ah! reader, could you but know the emotions that then agitated my breast! I thought I had now reached the height of all my expectations, for my voyage to the Floridas was undertaken in a great measure for the purpose of studying these lovely birds in their own beautiful islands. I followed them with my eyes, watching as it were every beat of their wings; and as they were rapidly advancing towards us, Captain DAY, who was aware of my anxiety to procure some, had every man stowed away out of sight and our gunners in readiness. The pilot, Mr. EGAN, proposed to offer the first taste of his "groceries" to the leader of the band. He was a first-rate shot, and had already killed many Flamingoes. The birds were now, as I thought, within a hundred and fifty yards; when suddenly, to our extreme disappointment, their chief veered away, and was of course followed by the rest. Mr.



EGAN, however, assured us that they would fly round the Key, and alight not far from us, in less than ten minutes, which in fact they did, although to me these minutes seemed almost hours. "Now they come," said the pilot, "keep low." This we did; but, alas! the Flamingoes were all, as I suppose, very old and experienced birds, with the exception of one, for on turning round the lower end of the Key, they spied our boat again, sailed away without flapping their wings, and alighted about four hundred yards from us, and upwards of one hundred from the shore, on a "soap flat" of vast extent, where neither boat nor man could approach them. I however watched their motions until dusk, when we reluctantly left the spot and advanced toward Indian Key. Mr. EGAN then told me that these birds habitually returned to their feeding-grounds toward evening, that they fed during the greater part of the night, and were much more nocturnal in their habits than any of the Heron tribe.

When I reached Key West, my first inquiries, addressed to Dr. BENJAMIN STROBEL, had reference to the Flamingoes, and I felt gratified by learning that he had killed a good number of them, and that he would assist us in procuring some. As on that Key they are fond of resorting to the shallow ponds formerly kept there as reservoirs of water, for the purpose of making salt, we visited them at different times, but always without success; and, although I saw a great number of them in the course of my stay in that country, I cannot even at this moment boast of having had the satisfaction of shooting a single individual.

A very few of these birds have been known to proceed eastward of the Floridas beyond Charleston in South Carolina, and some have been procured there within eight or ten years back. None have ever been observed about the mouths of the Mississippi; and to my great surprise I did not meet with any in the course of my voyage to the Texas, where, indeed, I was assured they had never been seen, at least as far as Galveston Island. The western coast of Florida, and some portions of that of Alabama, in the neighbourhood of Pensacola, are the parts to which they mostly resort; but they are said to be there always extremely shy, and can be procured only by waylaying them in the vicinity of their feeding-grounds toward evening, when, on one occasion, Dr. STROBEL shot several in the course of a few hours. Dr. LEITNER also procured some in the course of his botanical excursions along the western coast of the Floridas, where he was at last murdered by some party of Seminole Indians, at the time of our last disastrous war with those children of the desert.

Flamingoes, as I am informed, are abundant on the Island of Cuba, more especially on the southern side of some of its shores, and where many islets at some distance from the mainland afford them ample protection. In their



flight they resemble Ibises, and they usually move in lines, with the neck and legs fully extended, alternately flapping their wings for twenty or thirty yards and sailing over a like space. Before alighting they generally sail round the place for several minutes, when their glowing tints become most conspicuous. They very rarely alight on the shore itself, unless, as I am told, during the breeding season, but usually in the water, and on shallow banks, whether of mud or of sand, from which, however, they often wade to the shores. Their walk is stately and slow, and their cautiousness extreme, so that it is very difficult to approach them, as their great height enables them to see and watch the movements of their various enemies at a distance. When travelling over the water, they rarely fly at a greater height than eight or ten feet; but when passing over the land, no matter how short the distance may be, they, as well as Ibises and Herons, advance at a considerable elevation. I well remember that on one occasion, when near Key West, I saw one of them flying directly towards a small hammock of mangroves, to which I was near, and towards which I made, in full expectation of having a fine shot. When the bird came within a hundred and twenty yards, it rose obliquely, and when directly over my head, was almost as far off. I fired, but with no other effect than that of altering its course, and inducing it to rise still higher. It continued to fly at this elevation until nearly half a mile off, when it sailed downwards, and resumed its wonted low flight.

Although my friends Dr. JOHN BACHMAN, Dr. WILSON, and WILLIAM KUNHARDT, Esq. of Charleston, have been at considerable trouble in endeavouring to procure accounts of the nidification of these birds and their habits during the breeding season, and although they, as well as myself, have made many inquiries by letter respecting them, of persons residing in Cuba, all that has been transmitted to me has proved of little interest. I am not, however, the less obliged by the kind intentions of these individuals, one of whom, A. MALLORY, Esq., thus writes to Captain CROFT.

*"Matanzas, April 20, 1837.*

"Capt. CROFT,

"Dear Sir,—I have made inquiry of several of the fishermen, and salt-rakers, who frequent the keys to the windward of this place, in regard to the habits of the Flamingo, and have obtained the following information, which will be found, I believe, pretty correct: 1st, They build upon nearly all the Keys to the windward, the nearest of which is called Collocino Lignas. 2ndly, It builds upon the ground. 3dly, The nest is an irregular mass of earth dug in the salt ponds, and entirely surrounded by water. It is scooped up from the immediate vicinity to the height of two or three feet,



and is of course hollow at the top. There is no lining, nor any thing but the bare earth. 4thly, The number of eggs is almost always two. When there is one, there has probably been some accident. The time of incubation is not known. The egg is white, and near the size of the Goose's egg. On scraping the shell, it has a bluish tinge. 5thly, The colour of the young is nearly white, and it does not attain the full scarlet colour until two years old. 6thly, When the young first leave the nest, they take to the water, and do not walk for about a fortnight, as their feet are almost as tender as jelly. I do not think it easy to procure an entire nest; but I am promised some of the eggs, this being the time to procure them.

"Very truly your obedient servant,

"A. MALLORY."

Another communication is as follows:

"The Flamingo is a kind of bird that lives in lagoons having a communication with the sea. This bird makes its nest on the shore of the same lagoon, with the mud which it heaps up to beyond the level of the water. Its eggs are about the size of those of a Goose; it only lays two or three at a time, which are hatched about the end of May. The young when they break the shell have no feathers, only a kind of cottony down which covers them. They immediately betake themselves to the water to harden their feet. They take from two to three months before their feathers are long enough to enable them to fly. The first year they are rose-coloured, and in the second they obtain their natural colour, being all scarlet; half their bill is black, and the points of the wings are all black; the eyes entirely blue. Its flesh is savoury, and its tongue is pure fat. It is easily tamed, and feeds on rice, maize-meal, &c. Its body is about a yard high, and the neck about half as much. The breadth of the nest, with little difference, is that of the crown of a hat. The way in which the female covers the eggs is by standing in the water on one foot and supporting its body on the nest. This bird always rests in a lagoon, supporting itself on one leg alternately; and it is to be observed that it always stands with its front to the wind."

An egg, presented to me by Dr. BACHMAN, and of which two were found in the nest, measures three inches and three-eighths in length, two inches and one-eighth in breadth, and is thus of an elongated form. The shell is thick, rather rough or granulated, and pure white externally, but of a bluish tint when the surface is scraped off.

RED FLAMINGO, *Phænicopterus ruber*, Wils. Amer. Orn., vol. viii. p. 145.

PHÆNICOPTERUS RUBER, Bonap. Syn., p. 348.

AMERICAN OR RED FLAMINGO, Nutt. Man., vol. ii. p. 71.

AMERICAN FLAMINGO, *Phænicopterus ruber*, Aud. Orn. Biog., vol. v. p. 255.



Male, 45½, 66.

Rather rare, and only during summer in the Florida Keys, and the western coast of Florida. Accidental as far as South Carolina. Constantly resident in Cuba.

Adult Male.

Bill more than double the length of the head, straight and higher than broad for half its length, then deflected and tapering to an obtuse point. Upper mandible with its dorsal line straight, convex at the curve, and again straight nearly to the end, when it becomes convex at the tip; the ridge broad and convex, on the deflected part expanded into a lanceolate plate, having a shallow groove in the middle, and separated from the edges by a narrow groove; its extremity narrow, and thin-edged, but obtuse, this part being analogous to the unguis of Ducks and other birds of that tribe. Lower mandible narrower than the upper at its base, but much broader in the rest of its extent; its angle rather long, wide, and filled with bare skin; its dorsal line concave, but at the tip convex, the ridge deeply depressed, there being a wide channel in its place, the sides nearly erect and a little convex, with six ridges on each side toward the tip. The edges of the upper mandible are furnished with about 150 oblique lamellæ, of which the external part is perpendicular, tapering, pointed, and tooth-like. The edge of the lower mandible is incurved in an extraordinary degree, leaving a convex upper surface about  $\frac{1}{4}$  inch in breadth, covered in its whole extent with transverse very delicate lamellæ, with an external series of larger lamellæ. The whole surface of the bill is covered with a thickened leathery skin, which becomes horny toward the end. The nostrils are linear, direct, sub-basal, nearer the margin than the ridge, operculate,  $1\frac{1}{4}$  inches long.

Head small, ovate; neck extremely elongated, and very slender, body slender. Legs extremely long; the bare part of the tibia  $9\frac{1}{2}$  inches, with 30 very broad scutella before, and about 40 behind, the scutella both here and on the tarsus almost meeting so as scarcely to leave any interspace. Tarsus extremely long, slender, its anterior scutella 54, posterior 65. Hind toe very small, with 3 large scutella, its claw oblong, depressed, obtuse; it is 5 twelfths of an inch shorter than the outer, which is also 5 twelfths shorter than the middle toe. The webs are anteriorly emarginate and crenate; they are very thick, rugous, and reticulated, especially on the sole; the lower surface of the toes is tessellated with squarish, flattish, thickened scales, resembling mosaic work, and the upper surface is covered with numerous broad, but short scutella. The claws are oblong, obtuse, depressed, and very similar to those of a monkey.

The space between the bill and the eye is bare. The plumage is generally compact, the feathers rounded; those on the neck short. Wings long,



very broad, pointed; the first primary half a twelfth of an inch shorter than the second, which is longest, and exceeds the third by one-twelfth; some of the inner secondaries much elongated, tapering, and extending five or six inches beyond the first primary when the wing is closed. Tail very short.

Bill black beyond the curve, then orange, and towards the base pure yellow, of which colour also is the bare skin at its base. Iris blue. Feet lake-colour. The plumage is of a very rich pure scarlet, excepting the ten primaries, and twenty of the secondaries, which are black, the inner ten elongated secondaries being scarlet.

Length to carpal joint  $27\frac{3}{4}$  inches, to end of wing 44, to end of tail  $45\frac{1}{2}$ , to end of claws  $62\frac{1}{2}$ ; extent of wings 66; bare part of tibia 9; tarsus  $13\frac{1}{2}$ ; middle toe and claw  $3\frac{5}{8}$ ; hind toe and claw  $\frac{1}{2}$ ; spread of foot from outer to inner claw 5; wing from flexure 16; tail 6; circumference of body 24. Weight 7 lbs. 8 oz.

The Female is similar to the male, but much smaller; its weight 6 lbs. 4 oz.

A male preserved in spirits. On the roof of the mouth is a large prominent median ridge, which toward the end has two sharp edges; the sides concave and covered with lamellæ. The lower mandible is deeply and widely grooved, forming a cavity 1 inch in depth at the curvature, the tip narrowed but obtuse, and with a flattened broadly ovate surface above. The tongue, which lies in this deep groove, by which it is confined so as to be capable of little motion, is a fleshy, somewhat compressed, decurved body, 2 inches  $2\frac{1}{2}$  twelfths long, measured along its upper median line, having at its base on each side three series of very pointed papillæ, and on each side about 20 conical recurved, horny, acuminate papillæ, about  $\frac{1}{4}$  inch in length; between which is a narrow median groove. These papillæ terminate at the curvature, beyond which is a lanceolate flattened horny surface, with a thin elevated margin, the organ at that part tapering to an obtuse point, horny on its lower surface. The nostrils are  $1\frac{1}{4}$  inches long; the aperture of the ear very small,  $2\frac{1}{2}$  twelfths in diameter, that of the eye  $4\frac{1}{2}$  twelfths. In this specimen the whole of the thoracic and abdominal viscera have been removed.

The trachea, which is narrow, little flattened, and with its rings firm, passes down in front of the vertebræ to the distance of 12 inches, and is then deflected to the right side for 11 inches more. The diameter at the upper part is  $4\frac{3}{4}$  twelfths, and it gradually enlarges to  $5\frac{1}{2}$  twelfths; at the lower part of the neck its greatest breadth is 7 twelfths. It then passes over the vertebræ, continuing of the same breadth, enters the thorax, contracts at its lower part and is compressed, its diameter being 4 twelfths.



The number of rings is 330. The bronchi are wide, short, compressed, of about 15 half rings.

The aperture of the glottis is 6 twelfths long; at its anterior part is a transverse series of 12 short papillæ directed forward, and behind it are numerous pointed papillæ, of which the middle are largest. The muscles of the upper larynx are two, one passing obliquely from the edge of the marginal cartilage to the edge of the thyroid bone, for the purpose of opening the aperture of the glottis; the other passing from the fore part of the edge of the thyroid bone to the base of the cricoid and arytenoid, for the purpose of pulling these parts forward, and thus closing the aperture. The contractor muscles are of moderate strength, and the trachea is enveloped in numerous layers of dense cellular tissue. The sterno-tracheals, which are of moderate size, are in part a continuation of the contractors, which moreover send a slip to the inferior larynx.

Fig. 1.

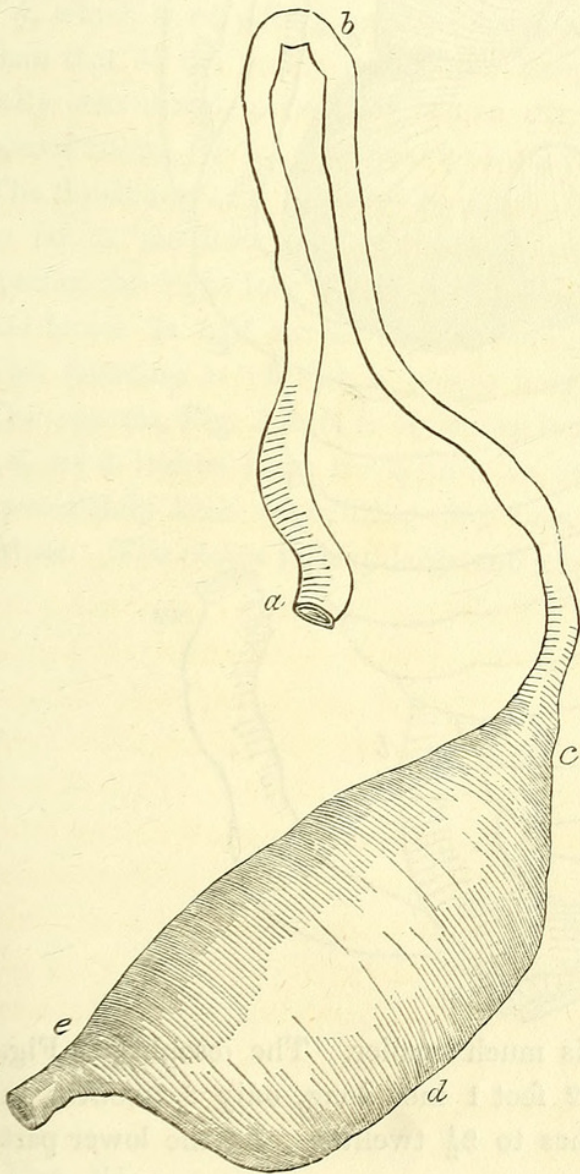


Fig. 3.

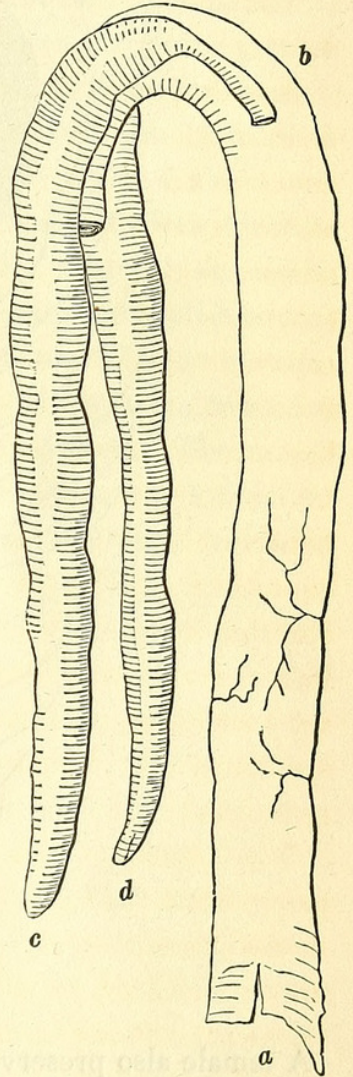
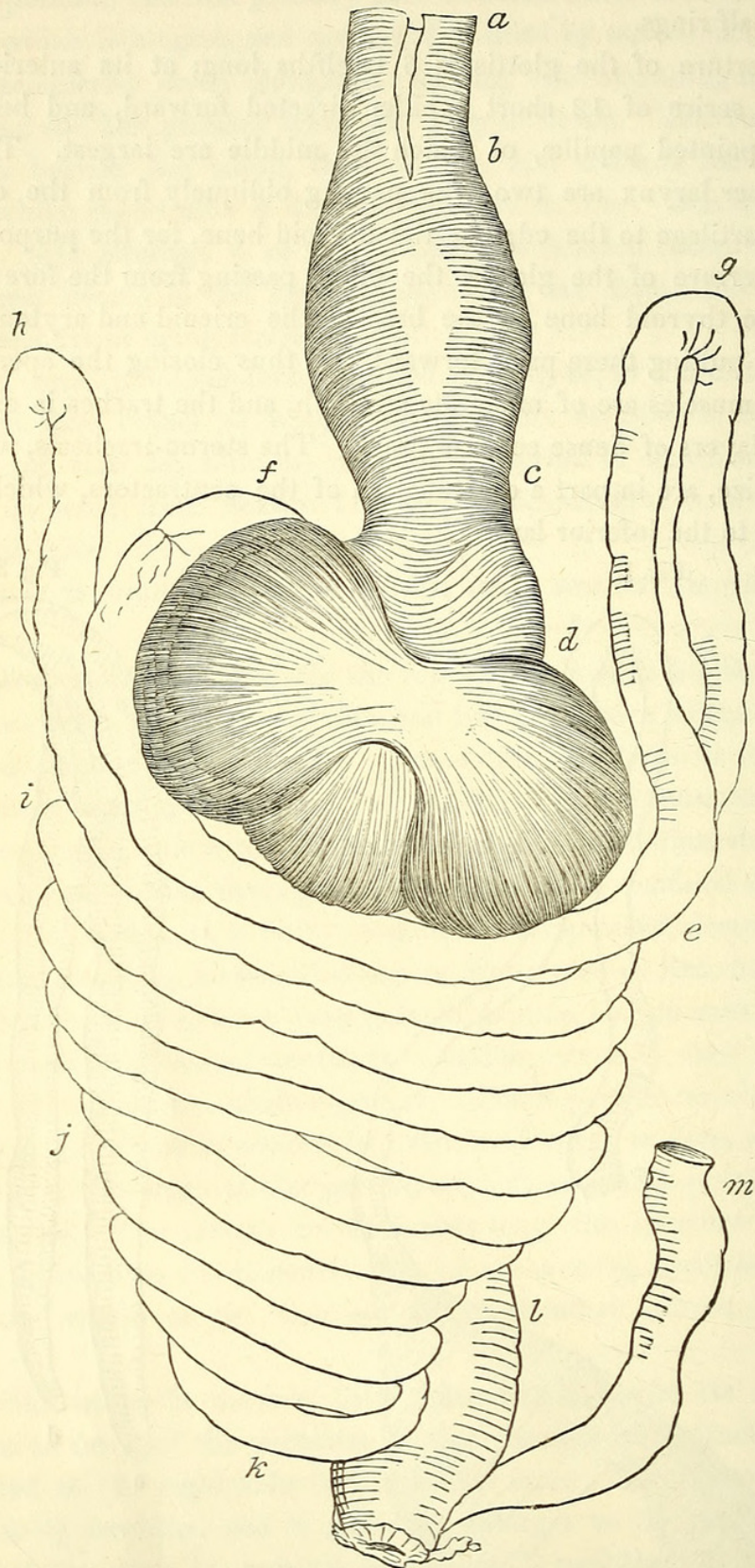




Fig. 2.



A female also preserved in spirits is much smaller. The œsophagus, Fig. 1, *a b c d* (diminished one-third) is 2 feet 1 inch long, only 3 twelfths in width at the upper part, and diminishes to  $2\frac{1}{2}$  twelfths. At the lower part



of the neck however it enlarges into a crop, *c d e*,  $3\frac{1}{4}$  inches long and  $2\frac{1}{2}$  inches in its greatest width. On entering the thorax, the œsophagus has a diameter of 9 twelfths; the proventriculus, Fig. 2, *a b c*, enlarges to an ovate sac,  $1\frac{1}{4}$  inches in its greatest breadth. The stomach, *d e f*, is a very muscular gizzard, of an elliptical form, placed obliquely, and exactly resembling that of a Duck or Goose; its length 1 inch 7 twelfths, its breadth 2 inches 3 twelfths. Its lateral muscles are extremely developed, the left being 1 inch 1 twelfth thick, the other 1 inch; the epithelium thick, tough, brownish-red, marked with longitudinal coarse grooves, but not flattened on the two surfaces, opposite the muscles, as is the case in Ducks and Geese. The proventricular glands are very large, and occupy a belt  $1\frac{3}{4}$  inches in breadth. The contents of the stomach are numerous very small univalve shells of a great variety of species and fragments of larger shells, which, however, have probably been used in place of gravel; for the structure of the œsophagus and stomach would indicate that the bird is graminivorous. The intestine, *f k*, which is very long, and of considerable width, its diameter being greater than that of the upper part of the œsophagus, is very regularly and beautifully convoluted, presenting, when the bird is opened in front, 10 parallel convolutions, *f g h i j k*, inclined from right to left at an angle of about  $30^{\circ}$ . The duodenum, *f g h*, passes round the edge of the stomach, curves upwards as far as the fore part of the proventriculus, is then doubled on itself, reaches the right lobe of the liver, which has a large elliptical gall-bladder, and forms 32 half curves in all, ending above the stomach in the rectum. The intestine is 11 feet 4 inches long, its average diameter  $4\frac{1}{2}$  twelfths. The rectum, Fig. 3, *a b*, is  $5\frac{1}{2}$  inches long, its diameter  $\frac{1}{2}$  inch. The cœca, *c d*, are 4 inches long; for  $\frac{1}{2}$  inch at the base their diameter is 1 twelfth, immediately after 4 twelfths; they then taper to the extremity, which is obtuse. The cloaca is very large and globular.





*American Flamingo*

*Adult 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.*





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