THE IVORY-BILLED WOODPECKER.

†PICUS PRINCIPALIS, *Linn.*

PLATE CCLVI.—MALE AND FEMALES.

I have always imagined, that in the plumage of the beautiful Ivory-billed Woodpecker, there is something very closely allied to the style of colouring of the great VANDYKE. The broad extent of its dark glossy body and tail, the large and well-defined white markings of its wings, neck, and bill, relieved by the rich carmine of the pendent crest of the male, and the brilliant yellow of its eye, have never failed to remind me of some of the boldest and noblest productions of that inimitable artist's pencil. So strongly indeed have these thoughts become ingrafted in my mind, as I gradually obtained a more intimate acquaintance with the Ivory-billed Woodpecker, that whenever I have observed one of these birds flying from one tree to another, I have mentally exclaimed, "There goes a Vandyke!" This notion may seem strange, perhaps ludicrous, to you, good reader, but I relate it as a fact, and whether or not it may be found in accordance with your own ideas, after you have inspected the plate in which is represented this splendid species of the Woodpecker tribe, is perhaps of little consequence.

The Ivory-billed Woodpecker confines its rambles to a comparatively very small portion of the United States, it never having been observed in the Middle States within the memory of any person now living there. In fact, in no portion of these districts does the nature of the woods appear suitable to its remarkable habits.

Descending the Ohio, we meet with this splendid bird for the first time near the confluence of that beautiful river and the Mississippi; after which, following the windings of the latter, either downwards toward the sea, or upwards in the direction of the Missouri, we frequently observe it. On the Atlantic coast, North Carolina may be taken as the limit of its distribution, although now and then an individual of the species may be accidentally seen in Maryland. To the westward of the Mississippi, it is found in all the dense forests bordering the streams which empty their waters into that majestic river, from the very declivities of the Rocky Mountains. The lower parts of the Carolinas, Georgia, Alabama, Louisiana, and Mississippi, are, however, the most favourite resorts of this bird, and in those States it constantly resides, breeds, and passes a life of peaceful enjoyment, finding

Ivory-billed Woodpecker.

1 Male. 2 & 3 Female.

a profusion of food in all the deep, dark, and gloomy swamps dispersed throughout them.

I wish, kind reader, it were in my power to present to your mind's eye the favourite resort of the Ivory-billed Woodpecker. Would that I could describe the extent of those deep morasses, overshadowed by millions of gigantic dark cypresses, spreading their sturdy moss-covered branches, as if to admonish intruding man to pause and reflect on the many difficulties which he must encounter, should he persist in venturing farther into their almost inaccessible recesses, extending for miles before him, where he should be interrupted by huge projecting branches, here and there the massy trunk of a fallen and decaying tree, and thousands of creeping and twining plants of numberless species! Would that I could represent to you the dangerous nature of the ground, its oozing, spongy, and miry disposition, although covered with a beautiful but treacherous carpeting, composed of the richest mosses, flags, and water-lilies, no sooner receiving the pressure of the foot than it yields and endangers the very life of the adventurer, whilst here and there, as he approaches an opening, that proves merely a lake of black muddy water, his ear is assailed by the dismal croaking of innumerable frogs, the hissing of serpents, or the bellowing of alligators! Would that I could give you an idea of the sultry pestiferous atmosphere that nearly suffocates the intruder during the meridian heat of our dogdays, in those gloomy and horrible swamps! But the attempt to picture these scenes would be vain. Nothing short of ocular demonstration can impress any adequate idea of them.

How often, kind reader, have I thought of the difference of the tasks imposed on different minds, when, travelling in countries far distant from those where birds of this species and others as difficult to be procured are now and then offered for sale in the form of dried skins, I have heard the amateur or closet-naturalist express his astonishment that half-a-crown was asked by the person who had perhaps followed the bird when alive over miles of such swamps, and after procuring it, had prepared its skin in the best manner, and carried it to a market thousands of miles distant from the spot where he had obtained it. I must say, that it has at least grieved me as much as when I have heard some idle fop complain of the poverty of the Gallery of the Louvre, where he had paid nothing, or when I have listened to the same infatuated idler lamenting the loss of his shilling, as he sauntered through the Exhibition Rooms of the Royal Academy of London, or any equally valuable repository of art. But, let us return to the biography of the famed Ivory-billed Woodpecker.

The flight of this bird is graceful in the extreme, although seldom prolonged to more than a few hundred yards at a time, unless when it has to

cross a large river, which it does in deep undulations, opening its wings at first to their full extent, and nearly closing them to renew the propelling impulse. The transit from one tree to another, even should the distance be as much as a hundred yards, is performed by a single sweep, and the bird appears as if merely swinging itself from the top of the one tree to that of the other, forming an elegantly curved line. At this moment all the beauty of the plumage is exhibited, and strikes the beholder with pleasure. It never utters any sound whilst on wing, unless during the love-season; but at all other times, no sooner has this bird alighted than its remarkable voice is heard, at almost every leap which it makes, whilst ascending against the upper parts of the trunk of a tree, or its highest branches. Its notes are clear, loud, and yet rather plaintive. They are heard at a considerable distance, perhaps half a mile, and resemble the false high note of a clarionet. They are usually repeated three times in succession, and may be represented by the monosyllable *pait, pait, pait*. These are heard so frequently as to induce me to say that the bird spends few minutes of the day without uttering them, and this circumstance leads to its destruction, which is aimed at, not because (as is supposed by some) this species is a destroyer of trees, but more because it is a beautiful bird, and its rich scalp attached to the upper mandible forms an ornament for the war-dress of most of our Indians, or for the shot-pouch of our squatters and hunters, by all of whom the bird is shot merely for that purpose.

Travellers of all nations are also fond of possessing the upper part of the head and the bill of the male, and I have frequently remarked, that on a steamboat's reaching what we call a *wooding-place*, the *strangers* were very apt to pay a quarter of a dollar for two or three heads of this Woodpecker. I have seen entire belts of Indian chiefs closely ornamented with the tufts and bills of this species, and have observed that a great value is frequently put upon them.

The Ivory-billed Woodpecker nestles earlier in spring than any other species of its tribe. I have observed it boring a hole for that purpose in the beginning of March. The hole is, I believe, always made in the trunk of a live tree, generally an ash or a hagberry, and is at a great height. The birds pay great regard to the particular situation of the tree, and the inclination of its trunk; first, because they prefer retirement, and again, because they are anxious to secure the aperture against the access of water during beating rains. To prevent such a calamity, the hole is generally dug immediately under the junction of a large branch with the trunk. It is first bored horizontally for a few inches, then directly downwards, and not in a spiral manner, as some people have imagined. According to circumstances, this cavity is more or less deep, being sometimes not more than ten inches,

whilst at other times it reaches nearly three feet downwards into the core of the tree. I have been led to think that these differences result from the more or less immediate necessity under which the female may be of depositing her eggs, and again have thought that the older the Woodpecker is, the deeper does it make its hole. The average diameter of the different nests which I have examined was about seven inches within, although the entrance, which is perfectly round, is only just large enough to admit the bird.

Both birds work most assiduously at this excavation, one waiting outside to encourage the other, whilst it is engaged in digging, and when the latter is fatigued, taking its place. I have approached trees whilst these Woodpeckers were thus busily employed in forming their nest, and by resting my head against the bark, could easily distinguish every blow given by the bird. I observed that in two instances, when the Woodpeckers saw me thus at the foot of the tree in which they were digging their nest, they abandoned it for ever. For the first brood there are generally six eggs. They are deposited on a few chips at the bottom of the hole, and are of a pure white colour. The young are seen creeping out of the hole about a fortnight before they venture to fly to any other tree. The second brood makes its appearance about the 15th of August.

In Kentucky and Indiana, the Ivory-bills seldom raise more than one brood in the season. The young are at first of the colour of the female, only that they want the crest, which, however, grows rapidly, and towards autumn, particularly in birds of the first breed, is nearly equal to that of the mother. The males have then a slight line of red on the head, and do not attain their richness of plumage until spring, or their full size until the second year. Indeed, even then, a difference is easily observed between them and individuals which are much older.

The food of this species consists principally of beetles, larvæ, and large grubs. No sooner, however, are the grapes of our forests ripe than they are eaten by the Ivory-billed Woodpecker with great avidity. I have seen this bird hang by its claws to the vines, in the position so often assumed by a Titmouse, and, reaching downwards, help itself to a bunch of grapes with much apparent pleasure. Persimons are also sought for by them, as soon as the fruit becomes quite mellow, as are hagberries.

The Ivory-bill is never seen attacking the corn, or the fruit of the orchards, although it is sometimes observed working upon and chipping off the bark from the belted trees of the newly-cleared plantations. It seldom comes near the ground, but prefers at all times the tops of the tallest trees. Should it, however, discover the half-standing broken shaft of a large dead and rotten tree, it attacks it in such a manner as nearly to demolish it in the course of a few days. I have seen the remains of some of these ancient

monarchs of our forests so excavated, and that so singularly, that the tottering fragments of the trunk appeared to be merely supported by the great pile of chips by which its base was surrounded. The strength of this Woodpecker is such, that I have seen it detach pieces of bark seven or eight inches in length at a single blow of its powerful bill, and by beginning at the top branch of a dead tree, tear off the bark, to an extent of twenty or thirty feet, in the course of a few hours, leaping downwards with its body in an upward position, tossing its head to the right and left, or leaning it against the bark to ascertain the precise spot where the grubs were concealed, and immediately after renewing its blows with fresh vigour, all the while sounding its loud notes, as if highly delighted.

This species generally moves in pairs, after the young have left their parents. The female is always the most clamorous and the least shy. Their mutual attachment is, I believe, continued through life. Excepting when digging a hole for the reception of their eggs, these birds seldom, if ever, attack living trees, for any other purpose than that of procuring food, in doing which they destroy the insects that would otherwise prove injurious to the trees.

I have frequently observed the male and female retire to rest for the night, into the same hole in which they had long before reared their young. This generally happens a short time after sunset.

When wounded and brought to the ground, the Ivory-bill immediately makes for the nearest tree, and ascends it with great rapidity and perseverance, until it reaches the top branches, when it squats and hides, generally with great effect. Whilst ascending, it moves spirally round the tree, utters its loud *pait, pait, pait*, at almost every hop, but becomes silent the moment it reaches a place where it conceives itself secure. They sometimes cling to the bark with their claws so firmly, as to remain cramped to the spot for several hours after death. When taken by the hand, which is rather a hazardous undertaking, they strike with great violence, and inflict very severe wounds with their bill as well as claws, which are extremely sharp and strong. On such occasions, this bird utters a mournful and very piteous cry.

I have only to add to what I have said of the habits and distribution of this species, that I found it very abundant along the finely wooded margins of that singular stream, called "Buffalo Bayou," in the Texas, where we procured several specimens.

IVORY-BILLED WOODPECKER, *Picus principalis*, Wils. Amer. Orn., vol. iv. p. 20.

PICUS PRINCIPALIS, Bonap. Syn., p. 44.

IVORY-BILLED WOODPECKER, *Picus principalis*, Nutt. Man., vol. i. p. 564.

IVORY-BILLED WOODPECKER, *Picus principalis*, Aud. Orn. Biog., vol. i. p. 341; vol. v. p. 525.

Male, 21, 30. Female, $19\frac{1}{2}$, wing 10.

Common in Texas, Louisiana, and along the Mississippi, to the Ohio. Rare on the latter, to Henderson. From Florida to North Carolina. Resident.

Adult Male.

Bill long, straight, strong, polyhedral, tapering, compressed and truncated at the tip; mandibles nearly equal, both nearly straight in their dorsal outline. Nostrils basal, oval, partly covered by recumbent bristly feathers. Head large. Neck long and slender. Body robust. Feet rather short, robust; tarsus strong, scutellate before, scaly on the sides; two toes before and two behind, the inner hind toe shortest; claws strong, arched, very acute.

Plumage compact, glossy. Feathers of the head elongated and erectile. Wings large, the third and fourth quills longest. Tail long, graduated, of twelve tapering stiff feathers worn to a point by being rubbed against the bark of trees.

Bill of an ivory-white, whence the common name of the bird. Iris bright yellow. Feet greyish-blue. The general colour of the plumage is black, with violet reflections, more glossy above. The feathers of the middle and hind part of the head are of a vivid deep carmine. A broad band of white runs down the neck and back, on either side, commencing narrow under the ear, and terminating with the scapulars. The five outer primaries black, the rest white towards the end, the secondaries wholly white, so that when the wings are closed, the posterior part of the back seems white, although it is in reality black. Lateral tail-feathers with a spot of white near the tip of each web.

Length 21 inches, extent of wings 30; bill along the back $2\frac{1}{3}$, along the gap 3; tarsus 2.

Adult Female.

The female resembles the male in colouring, but wants the vivid patch on the crest, which is wholly black.

Two of these Woodpeckers, preserved in spirits, have afforded an opportunity of making the following observations.

The length to end of tail is $19\frac{1}{2}$ inches, to end of wings $16\frac{1}{2}$, to end of claws 15; wing from flexure 10; tail $9\frac{3}{4}$.

The width of the mouth is 1 inch. The bill, fig. 1, *a b*, p. 528, is much longer than the head, straight, robust, its horny covering of extreme thickness and solidity. It is broader than high at the base, in the proportion of 1 inch to 8 twelfths. The upper mandible, *a*, has its dorsal outline very slightly arched and deflected, the ridge narrow, the lateral ridge at the base equidistant from the median ridge and the margin, running parallel with the former, and passing out at the margin at the distance of 10 twelfths from the

tip; the space between the ridges concave, the margins overlapping and obtuse; the tip wedge-shaped and truncate. The lower mandible, *b*, has the angle of moderate length and width, the dorsal line ascending and very slightly convex, the ridge narrow, with a broad groove on each side, beyond which the sides become erect and convex, the edges very broad, for two-thirds of their length roundish, afterwards flattened, the tip wedged-shaped and abrupt. The gap-line is almost straight.

The roof of the mouth is somewhat convex: there are upon it two longitudinal papillate ridges, meeting anteriorly to the palatal slit, whence to the tip is a median groove, at the anterior extremity of which is a small hole; the upper mandible is but slightly concave. The posterior aperture of the nares is oblongo-linear, margined with acute papillæ, the space between it and the ridges also papillate.

Fig. 1.

The nostrils are oblong, 3 twelfths in length, $1\frac{1}{2}$ twelfths in height, entirely covered by the bristly reversed feathers. The aperture of the eye is $4\frac{1}{2}$ twelfths in width. That of the ear horizontally oblong, 35 twelfths in length, and 2 twelfths in height.

The heart is of moderate size, broadly conical, 1 inch 2 twelfths long, 1 inch 1 twelfth in breadth at the base. The liver is very small, the right lobe much larger than the left, the former being 11 twelfths long and 1 inch broad, while the latter is $10\frac{1}{2}$ twelfths long and 7 twelfths in breadth. There is no gall-bladder.

The œsophagus, *a b c*, is $6\frac{1}{2}$ inches long, and of the nearly uniform width of 6 twelfths. On entering the thorax, at *a*, it curves considerably to the left side, and becomes very muscular; the proventriculus, *b c*, has a breadth of $7\frac{1}{4}$ twelfths. The stomach, *c d*, is of moderate size, of a broadly

elliptical form, directed a little towards the right, somewhat compressed, 1 inch 2 twelfths long, and of about the same breadth. The muscular fasciculi on the proventriculus are extremely large. On the stomach also they are of great size, and the greatest thickness of its muscular coat is $1\frac{1}{2}$ twelfths. This organ is completely filled with very hard seeds of different kinds, and some pulpy matter, but without any insects or larvæ. Its inner coat is thin, dense, very tough, nearly smooth, and of a dusky brown colour. The proventricular glandules, which are very small, form a belt 1 inch in breadth. The intestine, *d e f g h*, is of moderate length and very wide. The duodenum curves at the distance of $3\frac{1}{4}$ inches. The pylorus is about two-twelfths in width, with an elevated margin, and allows the untritured seeds and other refuse to pass into the intestine, which in some parts is turgid with them. The intestine measures 24 inches in length; its width in the duodenal portion is $3\frac{1}{4}$ twelfths, and so continues to the length of 12 inches, when it gradually enlarges, so as at the commencement of the rectum to be 6 twelfths. The rectum itself, *e g h*, continues of that width, and is enlarged into a globular cloaca, *h*, $1\frac{1}{2}$ inches in diameter. The whole intestine is more or less filled with pulpy matter, together with a vast number of grape seeds and others of a much larger size, but all having a strong shell. Hence it appears that the stomach of this Woodpecker is not adapted for pounding very hard substances, and that the seeds of berries and pulpy fruits pass undigested through its intestinal canal. The same remark applies to all the other species examined. There are *no traces of cæca*.

The apparatus, by means of which the tongue of this and other Woodpeckers is protruded and retracted, is so beautiful a specimen of mechanism, and at the same time so perfectly simple, although by bungling describers it has been rendered almost unintelligible, that it may be expedient to present it here in detail, the more especially that this species, although not that in which it is exhibited in the highest degree of development or extension, is yet, as being one of the largest known, peculiarly well adapted for such an examination. Two figures, therefore, are here introduced.

In Fig. 1 are seen:—The upper and lower mandibles *a b*, the tongue *c d*, the terminal barbed portion *c*, the fleshy part *d*, the orbit and eye *e*, the salivary gland *f*, the hyoid bones *g g*, the neck *h h*, the furcula *i i*, the œsophagus *j j*, the trachea *k*, its lateral muscles *l l*, the cleido-tracheal *m m*.

In Fig. 2 are seen:—The lower mandible *b*, the salivary glands *f f*, the hyoid bones *g g*, the œsophagus *j j j*, the trachea *k*, the lateral muscles *l l*, the cleido-tracheal *m m*, the glosso-laryngeal *n n*, the muscles by which the tongue is exerted *o o*.

The bill of this species, Fig. 1, *a b*, measures 3 inches and 2 twelfths from the angle of the mouth; and the tongue, *c d*, which lines in the broad groove

of the lower mandible, reaches to 2 twelfths of the extreme tip, but at the will of the bird may be exerted so as to extend $3\frac{1}{2}$ inches beyond the point of the bill. The tongue itself presents the appearance of a slender fleshy worm-like body, having a middle longitudinal groove on its upper surface, which is transversely wrinkled, and terminated by a slender tapering bony point, of which the margins and part of the upper surface are covered with acicular prickles, which are in some degree moveable and directed backwards, but not capable of being bent outwards, much less in the direction of the tip of the tongue. The length of this organ is apparently 2 inches 8 twelfths; but if measured from the base of the basi-hyal bone, only 1 inch 11 twelfths; its breadth at the base $2\frac{1}{2}$ twelfths, slightly tapering to the end of its fleshy part, where it somewhat suddenly contracts, so as to have a breadth of little more than 1 twelfth. The length of the horny tip is 9 twelfths. The tongue at the base is entirely destitute of the lobes and papillæ which in other birds give it a sagittate appearance; and there is no uro-hyal bone, which in them slips into a groove along the front of the thyroid bone of the larynx. The mouth is of moderate width, its breadth being, as already mentioned, 11 twelfths, it being in this respect very different from that of Flycatchers, Goatsuckers, Swallows, and such birds as seize on living insects while on wing. The lower mandible is deeply concave within, wider than the tongue, and covered with mucous membrane until 1 inch 5 twelfths from the point, beyond which it is horny, with a median groove, near the commencement of which is a small aperture for the ducts of the salivary glands. The tongue is capable of being retracted 10 twelfths of an inch from the tip of the mandibles, and is then seen to slide into a sheath, formed by an induplication or intussusception of the membrane covering it, and having two frænula of elastic tissue inserted into the angle of the jaw. Here it may be proper to state, that in birds generally the bony elements of the tongue are seven, as may be represented by the accompanying diagram, in which the first or upper piece is named the glosso-hyal, the next the basi-hyal, the third, in the same line, the uro-hyal; the two coming off from the base of the second piece or basi-hyal are the apo-hyal, to each of which is appended another, the cerato-hyal. The tongue itself is in no degree extensile or contractile, but has for its solid basis a very slender basi-hyal bone, 1 inch $2\frac{1}{2}$ twelfths in length, terminated by a glosso-hyal bone $\frac{1}{2}$ inch in length, but, as already said, has no basal or uro-hyal bone, which, on account of the unusual extent of its motion, would form an impediment.

From the base of this basi-hyal bone, there proceed backwards and slightly

diverging, two slender apo-hyal bones, 1 inch 1 twelfth in length, each of which is continuous with an extremely elongated cerato-hyal bone, 4 inches and 1 twelfth in length, $\frac{3}{4}$ twelfth in breadth at the commencement, gradually tapering to a blunt point, convex on its lower surface, concave or channelled on the upper, passing under and internally of the articulation of the jaw, and curving upwards along the occiput, until the two meet on the top of the head at the level of the posterior margin of the orbit, in the median line of the cranium, which is much depressed, whence they proceed in mutual contact, inclining slightly to the right side, and terminate a little before the anterior margin of the orbit, half an inch behind the right nostril, and a quarter of an inch from the base of the bill. These prolongations of the os hyoides being of an osseo-cartilaginous texture, are possessed of much elasticity, so as in some measure to resemble a curved spring.

From near the angle or point of union of the two crura of the lower mandible internally, there proceeds on each side a slender muscle, *o o*, which, running backwards, comes in contact with the prolongation of the hyoid bone at the joint between the apo-hyal and cerato-hyal portions, and is thence continued along the whole extent of the latter, *o g*, *o g*, running chiefly along its upper side, but partially enclosing it, and bound to it by a sheath of cellular tissue, which allows it considerable motion. The bone and muscle are together enclosed in an extremely delicate, transparent, tenacious sheath, moistened internally with a serous fluid, and terminating at the end of the bone, where it is attached by elastic tissue to the cellular substance and periosteum near the base of the bill. This delicate sheath, perfectly smooth and lubricated on its inner surface, is on the outer attached by delicate filaments to the dense cellular tissue which forms a kind of external sheath. It is fixed in its place, and the hyoid bone with its muscle, *g g*, slides backwards and forwards in it.

The entire length from the tip of the tongue, *c*, to the tip of each prolongation of the hyoid bone at *e*, is 7 inches 2 twelfths. The protrusion of the tongue is effected by the contraction of the slender muscle above described, *o*, which having a fixed basis in the lower jaw near its angle, and acting upon the tip of the hyoid bone, which is in this bird situated anteriorly to the eye, on the forehead, near the base of the upper mandible at *c*, causes the hyoid bone to glide within its sheath until its tip has moved backwards over the forehead, the crown, and occiput, and then advanced forwards until beneath the articulation of the lower jaw, thus traversing a space of $3\frac{1}{2}$ inches; so that the tongue is protruded to 3 inches and 4 twelfths beyond the tip of the bill. When the muscle is relaxed, the parts regain their ordinary position by the aid of the elasticity of the prolongations of the

hyoid bones, and the action of another pair of muscles, to be presently described.

The tongue, *d*, is covered externally with a dense sheath of fibrous tissue. On its lower surface is seen on each side a very slender muscle, commencing at the extremity of the glosso-hyal bone, and running along the whole length of the basi-hyal bone, as well as of the apo-hyal, to be inserted into the cerato-hyal, at the distance of one inch from its base, on the outer edge. The action of this muscle, which has a strong tendon in its whole length, is to bend the tip of the tongue downwards, or to move the horn of the hyoid bone outwards. It may be called the glosso-hyal. It has another tendon running parallel to that mentioned, along its upper edge, of which the action must be to bend the tongue upwards upon the apo-hyal. Besides these muscles, there is another pair, forming the greater part of the fleshy portion of the tongue. They commence at the tip of the basi-hyal bone, or at *d*, proceed along the upper surface of the tongue, and, after running a course of $2\frac{3}{4}$ inches, pass along the anterior surface of the thyroid bone, wind along its edge, and are inserted near the middle surface of the trachea, about its tenth ring. The action of these muscles, alluded to at the end of the last paragraph, and marked *n n*, is to retract the tongue, when extended, as well as to pull forward the larynx.

Another pair of very slender muscles, *m m*, commence upon the edge of the thyroid bone externally of those last described, separate immediately from the trachea, pass directly down the neck in front, under the subcutaneous muscle and skin, to which they are firmly attached by cellular tissue, and are inserted into the furcular bone about the middle of its length. These muscles, the cleido-tracheales, are not peculiar to Woodpeckers, and have nothing particular to do with the movements of the tongue in those birds.

Parallel to the lower edge of the jaw, and extending from 4 twelfths anteriorly to its articulation to the junction of its crura, is, on each side, an elongated salivary gland, *ff*, attached to the jaw by cellular tissue. It is of a yellowish colour, internally parenchymatous, and sends off a duct, which enters the mouth by the aperture already mentioned, at the commencement of the groove in the horny part of the lower mandible. The fluid which it secretes is a glairy mucus, of a whitish colour, which being poured forth around the tip of the tongue covers it with a glutinous substance well adapted for causing the adhesion of any small body to it.

The Ivory-billed Woodpecker, then, having discovered an insect or larva in a chink of the bark, is enabled by suddenly protruding its tongue, covered with thick mucus, and having a strong slender sharp point furnished with small reversed prickles, to seize it and draw it into the mouth. These prickles are of special use in drawing from its retreat in the wood those

large larvæ, often two or three inches in length; but it does not appear probable that the bristly point is ever used to *transfix* an object, otherwise how should the object be again set free, without tearing off the prickles, which are extremely delicate and not capable of being bent in every direction?

The trachea, *k k*, is 5 inches 4 twelfths in length, considerably flattened, nearly of the uniform breadth of 3 twelfths throughout. The aperture of the glottis is 4 twelfths long, with a posterior flap of several series of papillæ. The rings of the trachea are very strong, firmly ossified, 92 in number. At the upper part 3 are incomplete; the last entire ring is very broad and bipartite, and there are 2 additional dimidiate rings. The bronchi are short, of 12 half rings. The lateral or contractor muscles, *l l*, commence in front, at the base of the thyroid bone, diverge, presently become lateral, and thus proceed until $4\frac{1}{2}$ twelfths from the extremity, when they terminate partly in the sterno-tracheal, but also send down a very thin slip, which is inserted on the first dimidiate ring.

The explanation of the mechanism by which the tongue is protruded as above given, differs materially from any of those to be found in English works at least, in some of which there is a very unnecessary prolixity as well as ambiguity. It does not appear that hitherto the real sheath in which the horns of the hyoid bone, with its muscle, move, has been observed, and the two very slender muscles which run from the sides of the thyroid bone to the furcula, are common to almost all birds, although they have been supposed to be peculiar to Woodpeckers.

THE PILEATED WOODPECKER.

+ *PICUS PILEATUS*, *Linn.*

PLATE CCLVII.—MALE, FEMALE, AND YOUNG MALES.

It would be difficult for me to say in what part of our extensive country I have not met with this hardy inhabitant of the forest. Even now, when several species of our birds are becoming rare, destroyed as they are, either to gratify the palate of the epicure, or to adorn the cabinet of the naturalist, the Pileated Woodpecker is every where to be found in the wild woods, although scarce and shy in the peopled districts.

Ivory-billed Woodpecker.

1 Male. 2 & 3 Female.

Audubon, John James. 1842. "The Ivory-Billed Woodpecker, *Picus principalis*, Linn. [Pl. 256]." *The birds of America : from drawings made in the United States and their territories* 4, 214–226. <https://doi.org/10.5962/p.319370>.

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