Borch\textsuperscript{ic}
ornithology
MM. Laveran et Millon citent ici plusieurs observations.

Le sel de Seignette s'appliquerait sans doute très-bien s'il était administré, suivant la méthode d'absorption, aux maladies qui se caractérisent par une sécrétion anormale d'acide urique. Ce sel communiqué, en effet, une activité particulière à la digestion; le carbonate alcalin qui se forme est apte à dissoudre l'acide urique, et à prévenir ainsi la formation des dépôts; le médicament pénètre sous forme d'aliment, et comme ce dernier semble la cause la plus directe du mal, le remède se produit aux sources mêmes de l'affection.

Après avoir étudié les transformations d'un médicament qui pouvait se brûler en partie, MM. Laveran et Millon ont observé le passage d'une substance dont tous les éléments, fortement oxydés, ne pouvaient contracter dans l'économie animale aucune oxydation nouvelle, ils ont fait choix du sulfate de soude.

Les urines contiennent normalement de l'acide sulfurique combiné, dont la proportion a été déterminée; elles varient de 2 gr. à 2,5 gr. en calculant sur l'acide sulfurique anhydre $\text{SO}_3$. Le sulfate de soude suit dans son passage les mêmes règles que le sel de Seignette. A doses fractionnées, les individus vigoureux et convalescents l'absorbent et le rejettent sans modification aucune. On fait arriver ainsi sans efforts 10 et 15 grammes de sulfate de soude dans les urines.

Dans des conditions contraires, lorsque le sujet est faible, lorsque la dose est forte et unique, ou bien si la fièvre agit, si les voies digestives sont dérangées, les urines ne contiennent que la proportion normale d'acide sulfurique.

Il est impossible de ne pas remarquer ici que les voies de l'absorption sont parallèles à celles de la combustion.

L'administration du soufre fournit des résultats négatifs; il ne s'absorbe pas, et n'est oxydé ni modifié en aucune façon.

L'inertie bien constatée de la salicine a fait borner son emploi à quelques cas de fièvre intermittente légère. Il était curieux de savoir si cette substance entièrement combustible, mais qui renferme une énorme proportion de carbone, et diffère ainsi très-notablement des autres substances alimentaires, ne subirait pas quelque transformation particulière. Dix individus qui ont fait usage de la salicine, ont constamment offert le même résultat. Leurs urines contenaient toutes de l'hydrure de salicyle et de l'acide salicylique.
AN INTRODUCTION
TO THE
ORNITHOLOGY OF CUvier,
FOR THE USE OF
STUDENTS AND TRAVELLERS.

By T. EDWARD BOWDICH, Esq.

CONDUCTOR OF THE MISSION TO ASHANTEE, MEMBER OF THE WETTERAVIAN
SOCIETY OF NATURAL HISTORY.

PARIS,
PRINTED BY J. SMITH.
1821.
PREFACE.

THis Manual is published with the same useful view which has been submitted in the Preface to the 'Analysis of the Natural Classification of Mammalia.'

The text is translated from Cuvier, arranged in a tabular form, illustrated by figures, and explained by notes comprehending the additional information which I have acquired during a patient study of the subject, preparatory to second travel in Africa.
THE SECOND CLASS OF VERTEBRATED ANIMALS.

BIRDS

Are vertebrated oviparous animals, with double respiration and circulation, organized for flight. Their lungs, not divided, fixed against the ribs, (1) are enveloped by a membrane pierced with large holes, which allow the air to pass into several cavities in the breast, the lower stomach, arm-pits, and even the interior of the bones; so that this fluid not only bathes the surface of the pulmonary vessels, but also that of an infinity of vessels in the rest of the body. (2) Thus, Birds breathe in certain respects by the branches of the aorta, as well as by those of their pulmonary artery; and the energy of their irritability is in proportion to the quantity of their respiration. Their whole body is so disposed as to partake of this energy. (3)

(1) The lungs of Mammalia are free and divided, and the dia-phragm, which separates the cavity of their breast from that of their belly, does not exist in Birds.

(2) In Mammalia the inspired atmospheric air proceeds no further than the lungs, where it is immediately decomposed, the oxygen remaining to purify the blood which has been returned by the veins, and the nitrogen escaping, or (according to recent conclusions on this long contested point) entering into the body in very small portions: we know that nitrogen is found by chemists in all animal substances except fat (which when burned produces water and carbonic acid in the same proportions as vegetables); in plants, it is only found in the Fungi and in the perisperm of the Gramineae. The atmospheric air not only performs its office in the lungs of Birds, but a portion of it proceeds to the aerian cavities (which are membranous bags, pervading even the substance of the beak and the skins of the feathers), insinuates itself between the muscles, and exercises the same salutary action on the blood contained in the vessels of these various parts of the body, as on that which has reached the lungs. The blood of Birds, from this greater proportion of oxygen, is of a much brighter red than that of Mammalia.

(3) The fact that two common Sparrows consume as much air as a Guinea Pig, demonstrates the greater capacity of the smaller frame of Birds, by means of the aerian cavities. Their system is consequently
Their anterior extremities, destined to support them in flight, cannot serve either for resting on or grasping; they are consequently biped, and take objects from the ground with their mouth: the body being necessarily inclined forwards beyond their feet, the thighs are in advance, and the toes are elongated to form a sufficient basis. The pelvis or basin is much extended in length, to furnish an adequate surface for the attachment of the muscles which support the body on the thighs. There is also a suite of muscles going from the basin to the toes, and passing over the knee and heel, so that the mere weight of the bird curves or contracts the toes; it is thus that they are enabled to sleep perched upon one foot. (1) The ischions, and especially the pubes, are prolonged backwards, and are placed wider apart, to leave the space necessary for the development of the eggs. See Pl. 1.

The neck and beak are elongated to enable them to reach the earth, but the former has sufficient mobility to bend backwards when the bird is standing still; it has, therefore, many vertebrae: on the other hand, the trunk, which merely serves as a support to the wings, is necessarily moveable only in a small degree. The sternum (to which the muscles which lower or depress the wing to strike the air in flight are attached) is of a very great extent, and its surface is further augmented by a plate or keel, projecting charged with more oxygen, which we know to be the powerful supporter of respiration, since a small animal, when confined in oxygen gas, lives thrice as long as another confined in the same bulk of common air. From imbibing a much greater proportion of this vivifying principle, Birds enjoy a much greater irritability; that is, their muscular force and digestive powers are greater, and all their efforts and actions are more energetic, instantaneous, and vigorous than those of larger animals whose construction does not afford these cavities. Irritability depends on respiration and circulation; sensibility on the brain and nerves. It is believed that the high temperature which the bodies of Birds attain, especially when sitting, and that extreme force which they employ in the act of flying, continued for several days, both depend on the action of the air on the blood.

(1) The course of these muscles from the ilium to the nails, is traced in the leg of a common Sparrow, fig. 14. It is evident, that when the angles a a are lessened (on the femur, tibia, and tarsus, f t T, becoming more nearly parallel to each other by the stooping of the bird on the perch), the tendons are strained to pass over the additional length created by the greater intervals, b c, between the joints, and the toes to which these tendons are fixed are cramped by the action. There is generally a distinct tendon passing to each point of the toes, and they unite above the knee. From the ilium to this point of union it is a muscular apparatus, but from thence it becomes tendon.
from the middle. It is formed of five pieces: a middle, of which this projecting plate is a part; two anterior lateral for the attachment of the ribs; and two exterior lateral for the extension of its surface. (1) The greater or lesser degree of ossification of the latter denotes more or less vigour for flight. The furcula, produced by the union of the two clavicles, and the two powerful supports or buttresses formed by the coracoid apophyses, (2) keep the shoulders widely apart; the wing sustained by the humerus, by the fore arm, and by the hand (which is elongated, shewing one finger and the vestiges of two others), (3) bears a row of elastic pens along its whole length, considerably extending the surface which strikes or gives the shock to the air. The pens adhering to the hand are called primary, and there are always ten; those which proceed from the fore arm are called secondary, their number varies; the weaker feathers attached to the humerus are called scapulare; the bone which represents the thumb has also some pens, called bastard. (4)

(1) These five pieces are only distinct in the young bird; see the sternum of a fowl, fig. 15, from Geoffroy’s Memoir in the 10th volume of the Annales de Musée, wherein he observes, that, in general, one half of the sternal ribs, r r, proceed from the anterior laterals, and the other half from the posterior laterals; but it sometimes happens, that the greater number, or even the whole, are attached to the former: a a are the anterior laterals, p p the posterior; s is the part corresponding to our sternum.

(2) See pl. 1. The apophysis is the base or round end of the bone, fitting into the opposite socket; the epiphysis is a small bone articulated on the upper surface of the extremity of a large bone, as in the humerus of pl. 1: the trace of these articulations remains distinct in Mammalia for six or seven years; but in Birds they are obliterated very soon after birth, their more active life demanding and perfecting an earlier ossification of the epiphysis. We know that the bony matter is deposited by the blood of the arteries, whilst the calcaneous is carried off by the lymphatic vessels; consequently, as the circulation of Birds is much more rapid, from the stimulus of the greater proportion of oxygen, the bony matter is supplied and appropriated much more speedily than in Mammalia.

(3) In Mammalia it is always the middle finger which is rudimentary when the others are wanting; hence it is concluded to be the middle finger which is the most perfect in the arm or wing of Birds; see pl. 1, f j.

(4) See fig. 17, the bones of the wing of a common Sparrow; also fig. 16. The primaries are also called the greater remiges, and the secondaries the lesser; the lower scapulare are called the tectrices majores, the upper the tectrices minores; the tectrices scapulares are situated at the lateral edge of the wing nearest the body.
The bony tail is very short, but it also bears a row of strong
pens, which, by spreading, contribute to the support of the bird;
their number is generally twelve, sometimes fourteen, and, in the
Gallinaeæ, even as many as eighteen.

The legs have a femur, a tibia, and a peronæum or fibula, con-
ected with the femur by an elastic ligament, by means of which
the extension is maintained without any effort on the part of the
muscles. (1) The tarsus and metatarsus are represented by a
single bone, terminating, towards the base, in three pullies.

There are most frequently three toes in front, and a great toe
behind; the latter is sometimes wanting. The great toe is directed
forwards in the Martinis. In the Scansores (Climbers) the last
as well as the great toe is directed backwards. The number of
articulations or joints increases at every toe, beginning with the
great toe, which has two; and ending with the last toe, which has
five. (2)

Birds are generally covered with feathers, the species of tegu-
ment best adapted to defend them from the rapid variations of

of the bird, and are particularly developed in the Alauda (Merops),
hanging down between the body and the wing. The bastard form
what is sometimes called the alula; they are strong feathers, or pens,
situated in the upper end of the under surface of the wing, and very
much developed in the Genus Falco. The tectrices inferiores are
soft feathers between the bastard and the body. The feathers of the
tail (which also has its tectrices superiores and inferiores) are called
rectrices, from being compared to a helm.

(1) I have attempted to render this clear by the figures 7, 8 and
9. In fig. 7, the ligament is in the relaxed state in which it rests when
the femur and tibia are nearly perpendicular, or at least form a very
obtuse angle; r is a small rise or swelling in that part of the bone, in
passing over which the ligament is compelled to strain or lengthen
itself, as in fig. 8; directly it has passed this swelling, the strain ceases,
and it instantly contracts, resuming the same state as at first, but on the
contrary side of the swelling, as in fig. 9. Thus the peculiar jirk in
the walk of Birds, particularly in the Gallinæ, is explained; the exer-
cion of the muscles raises the leg and foot from the ground, until the
femur and tibia form the angle which strains the ligament to the
utmost, as in fig. 8; and the sudden contraction of this ligament spon-
taneously raises the foot with a catch or jerk, as much higher from the
ground as the gait of the bird requires; in setting the foot to the
ground in order to raise the other, the muscles are again called upon
to act, until the ligament has resumed the position of fig. 8, its sub-
sequent and sudden release and contraction replacing the foot on the
ground as at first.

(2) This is also the case with Reptiles; in Mammalia there are
always an equal number of joints to each toe.
temperature to which their movements expose them. The aerian cavities which occupy the interior of their body, and even the place of the marrow in the bones, diminish their specific gravity. (1) The sternal portion of the ribs is ossified like the vertebral, in order to give more force to the dilatation of the breast. (2)

The eye of Birds is disposed so as to distinguish near and distant objects equally well. A vascular folded membrane, which proceeds from the bottom of the globe to the edge of the chrystalline, probably contributes to this property, by displacing the lentil. The anterior face of the globe is strengthened by a circle composed of bony pieces; and besides the two ordinary eye-lids, there is always a third placed in the inner angle, which, by means of a curious muscular apparel, can cover the front of the eye like a curtain. (3) The cornea is very convex, but the chrystalline is flat, and the vitreous small.

The ear of Birds has but one bone between the tympanum and the fenestra ovalis; (4) their helix is a cone, scarcely arched; but their semi-circular canals are large, and lodged in a part of the skull, where they are environed on all sides by aerian cavities, which communicate with the os quadratum. The nocturnal birds alone have a large exterior conch, which, however, does not project like that of quadrupeds; it is generally covered with feathers with finer beards than the others. (5)

The organ of smell, hid in the base of the beak, has generally

(1) The purpose of this organisation, however, is not well understood; it is not to aid their flight, as we might at first suppose, since the Ostrich and the Casoar are full of these aerian cavities, and yet scarcely fly at all; whilst the Genera Larus and Anus, (with the exception of the common Duck) and Birds which hunt on the surface of waters, whose frames are comparatively deficient in these cavities, (fig. 48, 49) and whose bones are full of marrow instead of air, fly exceedingly well.

(2) It will be recollected that this part of the ribs is only cartilaginous in Mammalia.

(3) This, which is called the nictitating membrane, being transparent, defends the eye of the bird when flying in face of the sun, without obstructing the sight. It is for the same purpose, in fact, as the coloured glass in our instruments for observing the sun. It also protects the eye of the Diving Birds, when under water.

(4) In Mammalia there are three, and they are articulated angularly.

(5) We must lay back the feathers with our fingers to discover the conch, which is a thin leathery piece of flesh, in shape not unlike our own; but the orifice of the ear is behind instead of before it.
only cartilaginous cornea, three in number, which vary in complication; it is very sensible, although it has not any sinus hollowed out in the thickness of the skull. (1) The width of the bony openings of the nostrils determines the form of the beak; and the cartilages, the membranes, the feathers, and other teguments which narrow these openings, influence the strength of smell, and the kind of nourishment.

The tongue has but little muscular substance, and is sustained by a prolongation of the os hyoidis. (2)

The feathers as well as the pens, for they only differ in size, are composed of a stem (hollow at its base), and beards, which bear others still smaller; their texture, their brilliance, their strength, their general form, varies to infinity. The touch must be weak in all the parts which are covered with feathers; and as the beak is almost always horny, and not very sensible, and the toes are covered with scales above and a callous skin below, this sense must be of very little efficacy in birds.

The feathers fall twice every year. In certain species, the winter plumage differs from that of the summer; in the greater number, the female differs from the male by less lively colours, and then the young ones of both sexes resemble the female. When male and female adults are of the same colour, the young ones have a plumage peculiar to themselves.

(1) In Mammalia, these sinuses (which are distinguished from simple cavities by having a channel of communication with the seat of some organ) are covered, as well as the cornea, with a soft membrane, upon which the branches of the olfactory nerves are distributed: their surface (against which the volatile particles of the effluvia of bodies strike after passing through the nose) is thus much more developed or spread, and consequently more susceptible. The tracing of the olfactory nerves to the palate, by Jacobson, satisfactorily accounts for the intimate sympathy between taste and smell. The projection of forehead in the Owl and the Elephant, which induced the ancients to attribute superior wisdom to them, is caused by the large cells between the interior and exterior surfaces of the frontal bone. In the Elephant they communicate with the nostrils, and are therefore true sinuses, which probably strengthen the sense of smelling; but in the Owl they are simple insulated cavities.

(2) See fig. 12, wherein c is the cartilaginous prolongation of the os hyoidis, and t the upper part of the trachea, the orifice of which is closed at the pleasure of the animal. Dumeril observes, that the organ of taste scarcely exists in Birds; that, in general, they have no saliva, and swallow their food without mastication. There are some, however, Parrots and Ducks, for instance, which appear to taste their food, and also possess the organs for furnishing saliva.
The brain of Birds has the same general characters as that of other oviparous vertebrated animals, but it is distinguished by a very considerable proportionate size, which often even surpasses that of the same organ in Mammalia. Its volume consists principally of tubercles, analogous to the "cannélés," and not in the hemispheres, which are very thin, and without circumvolutions. (1) The cerebellum is tolerably large, almost without lateral lobes, and almost entirely formed by the veriform process.

The trachea of Birds has its rings entire; at its bifurcation is a glottis, generally provided with distinct muscles, and called the inferior larynx; it is there that the voice of birds is formed; the enormous volume of air contained in the aerian cavities contributes to the strength, and the trachea, by its various forms and movements, to the modifications of the voice. (2) The superior larynx is very simple, and does not avail much.

The face or superior beak of Birds, formed principally by their intermaxillaries, is prolonged behind in two arcades; the internal

(1) This is the corpus rectiforme, which makes a part of the cerebellum in Birds; there is no middle lobe, which disappears in all the Mammalia below Apes. Sensibility is considered to depend on the proportion of brain and nerve: in our common Ducks and Fowls, the brain is not more than 1-300th part of the size of the whole body, whilst in Swallows, Parrots, Canaries, and others, it amounts to 1-14th part. Thus, the former, in whom a much smaller proportion of nerve is developed, are unequal to the art of making nests; whilst the latter display much ingenuity in the fabric, know where to find them again after a long absence, whistle and sing in their dreams, and display their superior sensibility in a variety of ways. We know that Swallows frequently fall to the ground in fits from their extreme sensibility.

(2) See fig. 13, wherein g is the glottis, which is of a horny substance. In Mammalia the bifurcation takes place without the intervention of a glottis. The inferior larynx is enlarged variously (sometimes into two large lobes) according to the nature of the voice of the bird. The circles which are continued all round in Birds, extend only half round the trachea of Mammalia. In the latter the voice is formed in the upper part of the trachea; in the former, in the lower or distinct part of which we have been speaking, and which has a small apparatus within, precisely similar to the mouth of a clarionet; whilst in Mammalia the trachea contains two chords only, which vibrate whenever we choose to pass a current of air through them, and thus produce the voice. This may be demonstrated in a degree by blowing gently through the trachea of Mammalia and Birds, even after dissection. Referring to this, M. Cuvier, in his Comparative Anatomy, has happily compared the trachea of Birds to a wind, and that of Mammalia to a stringed instrument.
of which is composed of the bones of the palate, and the external of the maxillaries and the jugals, both of which rest upon a flexible tympanic bone, vulgarly called the square bone; (1) this same face or front is articulated or united to the skull above by elastic plates; a mode of union which always leaves some mobility. (2)

The horn which covers the two mandibles supplies the place of teeth, and is sometimes pricked in such a manner as to represent them; its form, as well as that of the mandibles which support it, varies to infinity, according to the kind of food to which each species is accustomed.

The digestion of Birds is in proportion to the activity of their life and the strength of their respiration. The stomach is composed of three parts: the crop, which is an enlargement of the oesophagus; the succenturium, a membranous stomach, furnished within its cells by a multitude of glands, the juice of which is imbibed by the aliments; and the gizzard, armed with two vigorous muscles, united by two tendons, radiated and covered withinside by a velvet-like cartilage. (3) The aliments are ground there, and the more easily in proportion as the Birds take the precaution to

(1) In Mammalia the os quadratum (see fig. 1, pl. 2) makes but one with the temporal; Geoffroy first shewed that it was distinct in the 2d, 3d, and 4th Classes of Vertebrated animals. In the Genus, Testudo of the 3d, it appears scarcely separated, as if in the act of quitting the temporal.

(2) See the skull of a Duck, figs. 1 and 2: the maxillary ceases at the small rising which indicates its articulation with the jugal. The upper mandible being united to the skull by an elastic plate (p. fig. 3.) like a very thin slip of whalebone, has the power of raising itself towards the forehead; a motion impossible to the upper jaws of Mammalia.

(3) Fig. 11 was drawn from a preparation of the inside of a common fowl; α is the oesophagus; s the succenturium, and g the gizzard, which communicates internally at c; d is the duodenum or the first 12 inches of the intestines. The crop, or prolobus (p.), is represented empty; when full, it swells out like that of the Vulture, fig. 29. Fig. 6 is the stomach of the Heron; fig. 5 of the Procellaria Pelagica; fig. 4 of the Ostrich: the crop is wanting in each, but the succenturium is considerably developed. In the Heron it is confounded with the gizzard, which, however, is easily distinguished by its muscular fibres. In the Procellaria, the succenturium is very distinct from the gizzard or third stomach. In the Ostrich, the stomach seems divided into two parts; the upper and smaller of the two is more glandulous than the other. The grain or aliment remains long enough in the crop to be mollified by the heat and the humour (analogous to the saliva) which is discharged from its cells; so that, in fact, their food is chewed there,
swallow small stones, to augment the trituration. (2) In the
greater number of species which only live on flesh or fish, the
muscles and the lining of the gizzard are reduced to an extreme
weakness, and it seems to form but a single bag with the suc-
centurium. (3) The dilatation of the crop is also sometimes
wanting. (4)
The liver pours the bile into the intestines by two conduits,
which alternate with the two or three by which the pancreatic
liquor passes. (5) The pancreas of Birds is considerable, but
their spleen is small; they want the epiploön, the uses of which
are partly supplied by the cells of the aerian cavities; (6) two blind
appendices are placed towards the origin of the rectum, and at a
little distance from the anus; they are more or less long, accord-
ing to the diet of the bird. (7) The Herons have but one, which
is short; other genera, as the Pici, want them entirely.

instead of in the mouth, which is not furnished with salivary glands
like ours.

(2) The digestion of Birds is thus assisted by a mechanical in addition
to the chemical power.

(3) The most striking proof that it is much more laborious to digest
vegetables than flesh, is, that the intestines of the cat, which eats nothing
but flesh in its wild state, become one-third longer in the domestic
state, when they so frequently eat vegetables and bread: they are
known to be the same species.

(4) The Anas and the Insectivores of Temminck (the Ant Eaters, the
Motacillæ of Lin. Cincli, etc.) also want the crop or prolobus. When
the crop, or even the succenturium, is wanting, as in the Aquilæ, the
Bird is supplied either with very long intestines or very long cæcums,
and the upper part of the gizzard or stomach is generally armed with
numerous extra glands, the juices from which compensate in a degree
for the absence of the other aids of digestion. This muscular stomach
or gizzard of Birds is said to be more fleshy in proportion as the animal
possesses a weaker beak, or as its nourishment is more solid. On quit-
ting this stomach, the aliments, reduced to a sort of pap or chyme,
pass through the rest of the intestinal canal, wherein the most nutri-
tive parts are absorbed for the support or repair of the body; the rest
being ejected by the cloaca. Vaquelin discovered twice the quantity
of phosphate of lime in the excrements of Birds, which he found in the
grains forming their exclusive nourishment.

(5) The secretion of the pancreas is to moderate or soften the strength
of the bile.

(6) The epiploön is a sort of web, enveloping the intestines of Mamm-
alia, to support them in their place, and the injury of which is the
cause of hernia or rupture.

(7) The use of the cæcum is not known; see fig. 10, c,c, those of the
common fowl; this Bird is provided with long cæcums as well as the
The cloaca is a pocket, in which the rectum, the ureters, and the spermatie canals, or, in the female, the oviductuses, (1) terminate; its exterior opening is the anus. (2) In general, Birds do not discharge their urine, but it mixes with the solid excrements. The Ostriches, alone, have the cloaca sufficiently dilated for the urine to accumulate there.

In the greater number of genera, copulation takes place by the juxta-position of the anus; the Ostriches and several Palmpedes, however, have a penis, with a deep furrow on the outer surface, by which the seed is conducted. The testicles are situated in the interior, above the kidneys, and near the lungs; there is but one ovary and one oviductus.

The egg detached from the ovary, where the yolk only is perceptible, imbines the exterior liquor, called the white, in the upper part of the oviductus, and is furnished with its shell in the lower part of the canal; the young one is developed by incubation, unless the heat of the climate is sufficient, as it is with Ostriches. It has a horny tip at the end of its beak, which enables it to cleave the egg, and which falls off a few days after birth. (3)

three stomachs, since it feeds almost entirely on grain, which is one of the most difficult aliments to digest.

(1) In the winter season the oviductuses of Birds are scarcely distinguishable, on dissection; but in the spring they are very evidently developed, and the end nearest the ovary enlarges considerably, and environs it, to receive the falling eggs.

(2) In Mammalia, the rectum is continued to the anus, the ureters pass from the kidneys into the bladder, and both these channels and apertures are distinct; in Birds the anus is the inferior opening of a large bag, called cloaca, from its being a reservoir for the faeces as well as the secretions, and into which the rectum, the ureters, the spermatie ducts, and the bursa fabricii discharge their contents. The use of the secretion discharged into the cloaca by the bursa fabricii, which does not exist in Mammalia, is considered by some Naturalists to be that of colouring the yolk of the egg.

(3) Eggs require a heat of nearly 54° of Fahrenheit to enable the germ to develope itself. Almost all Birds sit and fast during the incubation: they feel a sort of fever produced by maternal love, which sometimes elevates their temperature as high as 79°. We first observe the germ besprinkled with red spots (which we soon recognice to be blood vessels) towards the centre, where we next perceive the heart in motion; we afterwards begin to distinguish the head, with two large eyes; the beak, the wings, and the claws are then developed; but all these parts are in a state of considerable softness. The albuminous matter is absorbed in proportion to the development of the foetus. The yolk does not appear to diminish in size, and it is only at the mo-
Every one knows the varied industry which Birds exercise in the construction of their nests, and the tender care which they take of their eggs and their young ones; it is the principal part of their instinct. Their rapid passage through the different regions of the atmosphere, and the lively and constant action of this element upon them, afford the means of presaging variations of the atmosphere of which we have no idea; which circumstance has, from the earliest times, induced superstition to attribute to Birds the power of announcing the future; (1) neither do they want memory, or even imagination, for they dream; and every one knows with what facility they are tamed, allow themselves to be trained to different services, and retain airs and words.

Division of the Class of Birds into Orders.

Of all the Classes of Animals that of Birds is the most marked, that in which species most resemble each other, and which is separated from all others by the greatest interval; its subdivision is consequently more difficult.

Their distribution is founded, like that of Mammalia, on the organs of manducation, or the beak; and on those of prehension, that is to say, the beak, and, especially, the feet.

We are first struck with the palmated feet, or those of which the toes are united by membranes, which distinguish all the swimming birds. The backward position of these feet, the length of the sternum, the neck often longer than the legs (to reach the deeper places), the close smooth plumage (impervious to water), contribute to make the Palmipedes good navigators.

In the other Birds which have, generally, some little web, at least between the external toes, we observe elevated tarsi; thighs naked of feathers towards the lower part; a slender shape; in a word, all the construction proper for fording or walking along the edges of waters, to search for food. Such in fact is the diet of the greater number, and, although some live on dry land, they are called Shore Birds or Grallæ.

iment when the bird is ready to be hatched, that this humour disappears, entering by the naval into the belly of the young bird. The yolk is supposed to be absorbed in the interior of the body, as it passes into the intestines, and may be considered as a sort of milk or first nourishment.

(1) The Palmipedes and Grallæ, for instance, always come to land when they foresee a storm; the Procellariæ, more especially, amongst the former, and the Fulicæ amongst the latter.
Amongst the true Land Birds, the Gallinacea have, like our domestic cock, a heavy appearance; short flight; a middle-sized beak, the upper mandible vaulted; the nostrils, partly covered with a soft swelled scale; and, almost always, the toes dentated at the edges, and short membranes between those in front. They live principally on grains.

_Birds of Prey_ have the beak crook'd, with a sharp point, and curved towards the base, which is entirely covered by a membrane wherein the nostrils are pierced; their feet are armed with strong nails. They live on flesh, and pursue other Birds: most of them, therefore, have a powerful flight. The greater number have a small web between the external toes.

The _Passeres_ comprehend many more species than all the other Families, but their organisation offers so much analogy that we cannot separate them, though they differ very much in size and strength. Their two external toes are united at their bases, and sometimes in a part of their length.

Lastly, we have given the name of _Climbers_ to the Birds whose external toe is turned behind like the great toe, because the greater number employ a construction so favourable to the vertical position, in climbing the trunks of trees.

Each of these orders is subdivided into Families and Genera, principally according to the formation of the beak.

SECOND CLASS OF VERTEBRATED ANIMALS.

ORDERS.

1. **Accipitres, Lin.**
   
   Beak crook'd. Fig. 18. Talons crook'd; 3 toes before, 1 behind.
   
   Nostrils inserted in a cera. Fig. 18. A short membrane, generally between the two external toes. Fig. 19.

2. **Passeres.**
   
   All such as cannot be classed in the other five orders.
*Grimpeurs*, Cuvier.

The external toe turned behind with the great toe. Fig. 20.


The upper jaw or mandible vaulted. Fig. 22. The nostrils placed in a large membranous space from the base of the beak, and covered by a cartilaginous scale. Fig. 21.


Naked thighs. Fig. 24.


The only birds whose neck exceeds the length of their legs. Palmated feet, for running, on short compressed tarsi, fixed in the hinder part of the body. Fig. 25.

Birds of Prey (*Accipitres*, Lin.) are distinguished or recognised by their crook’d beak and nails; powerful weapons, with which they pursue other Birds, and even the weaker Quadrupeds and Reptiles. They are the same, amongst Birds, as the *Carnivora* amongst Quadrupeds. The muscles of their legs and thighs indicate the force of their talons; their tarsi are rarely elongated. They all have four toes and the nails of the great and middle toes are the strongest.
LINNÆUS’S
DIVISION OF THE ORDER
ACCIPITRES
INTO
GENERA:


2. **Falco.** Rostrum aduncum basi cera instructum. (1) Caput pennis arcte tectum. Lingua bifida.

3. **Strix.** Rostrum aduncum (absque cera). (2) Nares oblongae, pennis setaceis recumbentibus obtectae. Caput grande auribus oculisque magnis. Lingua bifida.

4. **Lanius.** Rostrum rectiusculum dente utrinque versus apicem basi nudum. Lingua lacera.

Latham divides the Order *Accipitres* simply into Genera, as Linnaeus has done, but he has removed the Genus Lanius to the succeeding Order, like Cuvier; whilst Bechstein, Temminck, and others, retain it in the present.

(1) Latham also retains this as a distinct character of the Genus *Falco*, whereas it is evidently common to the Genus *Vultur* also.

(2) The *cera* exists in this Genus, covered wholly, or in part, with stiff hairs. Latham subdivides this Genus into *auriculatae* and *inauriculatae*; the other Genera present no subdivisions, and thus the traveller, for it may be no inconvenience to the Ornithologist, is perhaps obliged to search through 41 closely printed 4to. pages to find a species of Falco. The admirable sagacity and laborious observation of Linnaeus, although he founded his system on the exterior of animals, led him to foresee many of the peculiarities of their interior construction, which the science of Cuvier has demonstrated as the bases of a natural system, and most of the *Genera* of the former will be recognised in the *Families* of the latter.
ORDER I. ACCIPITRES.

FAMILIES.

1. DIURNÆ.

Nostrils inserted in a 3 toes before; 1 be-

naked cera. Fig. 18. hind without feathers.

Eyes directed side-

ways.

2. NOCTURNÆ.

Nostrils pierced at External toe turned Large eyes directed

the anterior edge of a behind at pleasure. frontways.
cera, covered more or

less with stiff hairs. p.27.

The Diurnæ have their eyes directed sideways; a membrane
called cera covering the base of the beak, in which the nostrils
are pierced; three toes before, one behind without feathers; the
two external toes almost always united at their base by a short
membrane; their plumage close; their pens strong; their flight
powerful; their stomach almost entirely membranous; their in-
testines little extended; their cæcum very short; their sternum
large and completely ossified, to afford a more extended surface
for the attachment of the muscles of the wing; and their furcula
semi-circular, and very much widened, the better to resist the
violent depressions of the humeri, necessary to a rapid flight.
Linnaeus made but two Genera of them, which are two natural
divisions, the Vultures and the Falcons. (1)

The Nocturnæ have a large head, very large eyes, directed
forwards, encircled by a ring of fine feathers, the anterior of

(1) I extract the following addenda from M. Temminck's description
of this order, in his Manuel d'Ornithologie, after Bechstein, Meyer,
and his own superb collection, universally allowed to be the first in
Europe.

"Beak compressed; nostrils open; toes rough underneath; nails
pointed. These birds live in monogamy; they nest on inaccessible
rocks, or very high trees; the number of their eggs never exceeds six.
Their food consists entirely of living, or very rarely of dead prey, which
they swallow in pieces enveloped in the hairs or feathers, these sub-
stances, as well as the bones, forming a ball in the stomach, and being
rejected by the mouth; they eat copiously when an opportunity pre-
sents itself, but they can fast several days; the blood of their victims is
sufficient to quench their thirst. The female is generally a third larger
in size than the male." Diurnel observes that the male birds of this
Order never sit on the eggs, but nourish the female while she does so.
which cover the membrane of the beak, and the posterior the opening of the ear. Their enormous pupil admits so many rays, that they are dazzled by the full day. Their skull thick, but of a slight substance, has large cavities which communicate with the ear, and probably strengthen their sense of hearing; but their flying apparatus does not possess great force. Their furcula can resist but little. Their feathers, with soft beards and fine down, do not make the least noise when flying. Their external toe may be directed, at pleasure, before or behind. These Birds generally fly during the twilight and moonlight. When they are attacked by day, or struck by some new object, they do not fly away, but erect themselves, assume strange postures, and make ridiculous gestures. Their gizzard is tolerably muscular, although their prey is entirely animal, consisting of mice, small birds, and insects, but it is preceded by a large crop; their cæcums are long and enlarged at the end. Small birds have a natural antipathy to them, and assemble from all parts to attack them, for which reason they are employed to attract birds into snares.

FAMILY I. DIURNÆ.

GENERA.

1. 

Beak elongated, curved towards the end. Part of the head or neck bare. Wings so long that they hold them half extended when walking.


Nostrils covered with stiff hairs, directed forwards, and a brush of feathers.


Projecting eyebrows, making the eyes appear sunk, and giving them a physiognomy entirely different to that of the other Genera. Fig. 32. p. 19.
Vultures have their eyes even with their heads; their tarsi reticulated, that is to say, covered with little roundish scales (fig. 19); the beak long, curved only at the end; a greater or lesser part of the head, or even of the neck, naked of feathers. The strength of their talons is not proportionate to their size, and they make more use of their beak. Their wings are so long, that they hold them half extended when walking. They are cowardly birds, and feed on carrion oftener than on living prey; after they have eaten, their crop forms a large projection above their furcula (fig. 29); a foetid humour runs from their nostrils, and they are almost reduced to a state of stupidity. (1)

The Griffons, placed by Gmelin in the Genus Falco, approach near to the Vultures by their manners and conformation. Their eyes are even with their head; their talons are proportionably weak; the wings are half spread during the time of repose; their crop, when full, projects from the base of the neck, but their head is entirely covered with feathers; their distinguishing character consists in a very strong beak, straight, crook'd at the end, swelled at the crook; and in nostrils covered with stiff bristles directed forwards, and a brush of similar bristles under the beak; their tarsi are very short, and feathered as far as the toes; their wings very long, and the third pen feather the longest. (2)

The only species of Griffon yet known is the V. Barbarus (Bearded Vulture, Vulturine Eagle, Lath.) the largest of all Birds of Prey in the Old World. Fig. 31.

Falcons form by far the most numerous Division of the Diurnal

(1) The inferior mandible straight, rounded, and inclined towards the point; mouth terminating in advance of the eyes; head naked, or covered with a very short down; wings sensibly rounded; the first remex short, not equalling the sixth; their second and third less long than the fourth, which is the longest. Their flight, although slow, allows them to rise to a prodigious height; their ascent is managed by winding, and their descent in the same way; their sight is piercing; the organ of smelling singularly perfect; their attitude embarrassed, and their gait heavy: they live in troops, and feed solely on carrion; They nest on the most inaccessible rocks, carry the nourishment for their young in their crops, and vomit it before them.—Tem.

Their nests are composed of branches and small slips of wood.—Dumeril.

(2) Head small; nostrils oval; feet short; four toes, the three front united by a short membrane, the middle toe very long. Nails slightly crook'd; the first remex of the wing a little shorter than the second. They live in pairs, constantly feed on living prey, which they eat on the spot without taking any away in their talons.—Tem.
Birds of Prey. They have the head and neck covered with feathers; their eyebrows form a projection which makes the eye appear sunk in, and gives a character to their physiognomy very different to that of the Vultures. The greater part feed on living prey, but they differ much amongst themselves with respect to the courage they evince in pursuing it. Their first plumage is often differently coloured to that of the adults; they only assume the latter in their third or fourth year, which has caused the species to be much multiplied by naturalists. The female is generally a third larger than the male, for which reason the latter is called Tiercelet. (1)

GENUS I. VULTUR.

SUB-GENERA.

1. Vultures Proper, Cuv.
   Beak large and strong. Nostrils crossways. Head and neck without feathers.
   Fig. 26.

2. Sarcoramphus, Dumeril.
   The cera at the base of the beak surmounted by carunculae. Fig. 28, 30.
   Nostrils oval and longitudinal.

3. Percnopterus, Cuv.
   Gypaetos, Bechstein.
   Neophron, Savigny.
   Cathartes, Illiger.
   Beak long and thin. Nostrils oval, longitudinal. Head, only, naked.
   Fig. 27.

Vultures, properly so called, have the beak large and strong, the nostrils crossways on the base, the head and neck without feathers, and a collar of long feathers at the base of the neck. They have as yet been only seen in the Old World. Vultur Fulvus, fig. 18; Vultur Cinereus, fig. 29; Vultur Auricularis, fig. 26.

(1) Beak crook'd; the inferior mandible obliquely rounded, and, sometimes, both sloped. Nostrils lateral, rounded, open. Tarsi covered with feathers, or smooth and covered with scales. Nails sharp, very much crook'd. Wings with strong stems.—Tem.
Sarcoramphus.—America produces some Vultures remarkable for the carunculae surmounting the membrane at the base of their beak, which is large as in the preceding, but the nostrils are oval or longitudinal. These are the Sarcoramphi of Dumeril. *Vultur Papa*, Lin. (King of the Vultures, Latham) fig. 28. *Vultur Gryphus* (Great Vulture of the Andes), fig. 30, which habitually prefers an elevation at which the mercury of the barometer sinks to about sixteen inches. (1)

The Percnopteri have the beak thin, long, and swelled above. Its head only, and not the neck, naked of feathers. These are birds of a moderate size, and their force does not approach that of the Vultures properly so called. They are therefore much more eager after carrion and all sorts of offal, which attracts them from a great distance. They do not even refuse excrements. *Vultur Percnop.* (Egyptian Vulture, Alpine Vulture, Latham), fig. 27. *Vultur Aura* (Turkey Buzzard, Latham).

**GENUS III. FALCO.**

**SUB-GENERA.**

1. **Nobiles.**

   A sharp tooth at the second feather of the point of the wing the longest. Fig. 35. Wings as long and longer than the tail.

2. **Hierofalco, Cuv.**

   A festoon, instead of a tooth, on each side wing, which is the point of the same as that of the beak. Fig. 33. **Nobiles.**

3. **Ignobiles.**

   A slight festoon in the fourth feather of the middle of the beak. the wing the longest. Fig. 34. p. 21.

(1) I expect that the Vulture of Ashantee will form a subdivision in the Sarcoramphi, which have hitherto only been found in America. Its cera is crowned with a caruncula, which, when the bird is flying, is small, but when it is seeking food, is so much elongated as to hang over the tip of the beak; when in the act of feeding, or when satiated, it hangs on one side to the length of two inches. This caruncula, and the skin of the head and neck, is wrinkled like that of a Turkey, and generally of a deep red, but sometimes of a pale livid blue. The plumage is dark brown, and it performs the same offices as the Percnopterus.
The *Nobiles*, or Falcons properly so called, are the most courageous in proportion to their size, a quality which proceeds from the strength of their beak, talons, and wings. Their beak, curved from its base, has a sharp tooth on each side of its point; and the second pen feather of their wings is the longest, the first being also nearly as long, which renders the entire wing longer, and more pointed. Some peculiar habits result from this. The length of the pen feathers weakens their vertical effort, and renders their flight in a calm atmosphere very oblique forwards, which obliges them, when they wish to rise in a straight line, to fly against the wind. These are the most docile of all birds, and the most serviceable in the art of falconry; being taught to pursue the game, and to return when called. They all have their wings as long or longer than the tail. (1)

*Falco Communis*, Gm. (the Common Falcon, Yearling Falcon, Haggard Falcon, *Lath.*)—*Falco Subbuteo*, (Hobby Falcon, *Lath.*) etc. etc.

The *Sacred Falcons* have the pen feathers of the wings as in other *Noble* Birds, all of whose inclinations they also evince; but their beak has only a festoon, like that of the *Ignobiles*. Their tail, long and spread, evidently surpasses their wings, although the latter are very long. Their short and reticulated tarsi are covered with feathers one third of their length. *Falco Candidans*, (Speckled Partridge Hawk, *Lath.*).

The *Ignobiles* (so called because they cannot well be employed in falconry,) are a more numerous tribe than that of the Nobiles, and more necessary to subdivide. The longest pen feather of their wings is almost always the fourth, and the first is very short, which produces the same effect as if their wing had been obliquely chopped off at the end, whence a weaker flight ensues. In all other respects they are equal, except that their beak is not so well armed, because there is no lateral tooth near its point, but only a slight festoon in the middle of the length.

(1) Beak strong; very short; inferior mandible sloped; nostrils wide; feet strong; toes strong, armed with curved and sharp nails; the first remex of the wing short, of equal length with the third, the second the longest. They nourish themselves with living prey, without ever feeding upon dead, and shew much address either in seizing or surprising it: they pursue birds at full speed, or fall perpendicularly upon them; and like to nest in rocks or in ruins of houses.—*Tem.*
SUB-GENUS III. IGNOBILES.

TRIBES.

   Beak very strong, straight at its base, curved only towards the point. Fig. 32. p. 24.

   Beak curved from the base. Wings shorter than the tail.

   Tarsi short, toes and nails feeble. Beak curved from the base, but disproportionately feeble. Fig. 36. p. 26.

4. Pernis, Cuv.
   Beak as Milvus. Interval between the eye and beak covered with close scaly feathers; and not naked or merely hairy as in all the others of the Genus Falco.

   Interval between the eye and beak naked. Wings at least as long as the tail.

6. Circus, Bechstein.
   A collar on each side of the neck, formed by the ends of the feathers covering the neck. Fig. 34.
7. **Serpentarius**, *Cuv.*

**Gypogeranus**, *Illiger.*

Beak cleft; eye-
brows projecting; orbit of the eye naked of fea-
thers. Fig. 37.

The only Birds of this Order with the from the occiput. The tarsi exceedingly long; two middle feathers of
plated. Fig. 38. Toes the tail considerably short in proportion. surpass the others.

**Eagles**, which form the first tribe, have a very strong beak, straight at the base, and only curved towards the point. It is amongst these that we find the largest species and the most pow-
erful of all Birds of Prey. (1)

The **Astur** tribe, which forms the second division of Ignobiles, have, like the two last divisions of Eagles, wings shorter than the tail; but their beak curves from its base, as in all those which follow. (2)

**Kites** have the tarsi short, the toes and nails weak, which, added to a beak equally disproportionate to their size, makes this tribe the most cowardly of the whole Genus; but they are distinguished by their excessively long wings, and by their forked tail, which gives them a most rapid and easy flight. Some have the tarsi very short, reticulated, and half covered with feathers. (5)

(1) Head flattened on the top, covered with elongated feathers. Beak very much crook’d, a long and very sharp point. Nostrils lateral, transverse, sloped; feet strong, armed with powerful nails, very much crook’d. Wings long, the first, second and third remiges the shortest; the first very short, the fourth and fifth the longest. They seize living prey with their talons, and take it to their young; when pressed with hunger they fall upon carrion.—Tem.

(2) Beak strong, superior mandible bearing a strongly marked tooth. Nostrils rather oval, wings two-thirds of the length of the tail; first remex much shorter than the second, the third almost equal to the fourth, which is the longest. Toes long, the middle much surpassing the lateral, nails much curved, and very sharp. Their flight is rapid, without shaking their wings much; it is only in pairing time that they describe circles in flying; they are cunning and malicious, and seize their prey flying; they mostly inhabit large woods, particularly those in the neighbourhood of rocks.—Tem.

(3) Beak curved at its base; feathers of the head elongated and terminated in a point; mouth cleft as far as under the eyes; nostrils oblique, their exterior edge marked with a fold; the first remex of the wing shorter than the sixth, the second a little shorter than the fifth, the third almost equal in length to the fourth, which is longer than all. In a state of repose they have an awkward attitude, but their flight is elegant; they seem to swim in the air, describing circles; they do not seize their prey when flying, but they fall upon it from above, when it is resting on the ground or on some elevation. *Tem.*
The Pernis tribe has, with the weak beak of the Kite, a very peculiar character, which is, that the interval between the eye and the beak, which in all the others of the Genus Falco is naked, or only presenting a few hairs, is covered with very close feathers, cut into scales. Their tarsi are half feathered in the upper part, and reticulated; they have an even tail, long wings, and the beak curved from its base, like all those which follow. Falco Apivorus, (Honey Buzzard, Lath.) La Bondree Huppée de Java.

The Buteo tribe has the wings long, the tail equal, and the beak curved from its base, the interval between which and the eye is without feathers; the feet strong. There are some with the tarsi feathered even to the toes (F. Pennatus); but the greater number have the tarsi naked and plated (F. Buteo. Bacha, Vail.). They are distinguished from Eagles by their beak, curved from its base; from Autours, or Eagle Autours, by tarsi covered with strong feathers, and by their long wings. (1)

The Circus tribe differs from the Buteo by more elevated tarsi, and by a species of collar, formed on each side of the neck by the ends of the feathers which cover the ears; fig. 54. (2) Falco Pygargus, (Ring-tailed Hen-harrier, Lath.) Falco Rufus (Harpy Falcon, Lath.)

The Serpentarius, or Secretary, is an African Bird of Prey, with the tarsi at least double the length of all the other Birds of this Family, which has made naturalists class it with the Grallæ; but its thighs, entirely covered with feathers, its beak crook’d and cleft, its projecting eyebrows, and all the details of its anatomy, place it in the present Order. Its tarsi are plated; its toes short in proportion; the orbit of its eye naked of feathers; it has a long stiff occipital crista, and the two middle pen feathers of its tail greatly surpass the others. It inhabits the sterile and open places in the neighbourhood of the Cape, where it pursues reptiles on foot, and has nails worn by dint of walking; fig. 57, 5o. Its principal strength is in its feet. (5)

(1) Beak weak, with a rounded tooth (not very apparent); the head large; the body massive and heavy. Feet with short tarsi; thighs breeched. Wings of a moderate length, the four first remiges sloped, the first very short, the second and third less long than the fourth, which is the longest. They have a heavy flight, do not take their prey flying, but generally lay wait for it in ambush on a tree. Tem.

(2) Beak small, superior mandible curved from its base, bearing a blunted tooth (not very apparent) at the root of the beak, and some straight hairs which hide a part of the cera. Nostrils open. Feet with very long and thin tarsi; body slender; tail long. Tem.

(3) This Bird was introduced into the French West India Islands, to destroy the numerous serpents.
TRIBE I. AQUILÆ.

DIVISIONS.

1. **Eagles proper, Cuv.**
   Tarsi covered with feathers to the bases of tail.
   Wings as long as the feathers to the bases of tail.
   the toes, reticulated.

2. **Haliæetus, Savigny.**
   **Aigles Pêcheurs, Cuv.**
   **Fishing Hawks, Latham.**
   Tarsi covered with feathers half way down, Ditto.
   the remaining half plated. p. 25.

3. **Harpyia, Cuv. Short-winged Fishing Eagles.**
   Tarsi very large and strong, half feathered, Ditto.
   Wings shorter than the tail.
   Very strong beak and nails.

4. **Morphinus, or Aigle Autour, Cuv.**
   Tarsi long and slim, half feathered. p. 25.
   Ditto. Toes weak.

3. **Cymindis, Cuv.**
   Tarsi very short, reticulated, half covered Ditto.
   Nostrils almost closed, or like a fine slit.
   with feathers in front.

**Eagles Proper** have their tarsi feathered to the root of the toes; they live in mountains, and pursue Birds and Quadrupeds; their wings are as long as their tails; their flight is as high as rapid, and their courage surpasses that of all other birds. *Falco Fulvus* (Black Eagle, Ring-tailed Eagle, Lath.) *Falco Chrysaetos*, (Gold Eagle, Gold Adler, Lath.) etc.

The **Harpies**, or Fishing Eagles with short wings, are American Eagles; their tarsi are very large, very strong, reticulated, and half feathered, like the Fishing Eagles properly so called, from which they only differ by the shortness of their wings; their beak and nails are even stronger than in any other tribe. *Falco Harpyia* (Oronooko Eagle, Lath.).

The **Cayenne Falcon** of Latham is a **Cymindis**.
DIVISION II. HALIÆTUS.

SUB-DIVISIONS.

   Nails grooved underneath, as in all the other Birds of Prey.

2. Pandion, Savigny.
   Balbusards, Cuv.
   Nails round underneath.

3. Caracara.
   Part of the side of the head, and sometimes of the neck, naked of feathers. Fig. 32.

The first Sub-division have the same wings as the Eagles Proper, but the tarsi are only covered with feathers on their upper half and half-plated on the other. They frequent the borders of rivers and the sea-shore, and live mostly on fish. *Falco Ossifragus,* (Sea Eagle or Osprey, Lath.) *Falco Leucocephalus* (White-headed Eagle, Bald Eagle, Lath.).

The Pandions have the beaks and feet of the former, but their nails are round underneath, whilst in other Birds of Prey they are hollowed into a groove; their tarsi are reticulated, and the second feather of their wings is the longest. We know but one species, spread through almost the whole of the globe on the banks of fresh waters, with few variations in the plumage.

America produces Fishing Eagles with long wings, like the preceding, where a larger or smaller portion of the sides of the head, and sometimes of the throat, is naked of feathers. They give them the common name of Caracara. Brazilian Kite, Lath. etc.

DIVISION IV. MORPHNUS.

SUB-DIVISIONS.

1. Tarsi naked, and plated.

2. Tarsi covered with feathers all the way down.

1. Urubitinga (Brazilian Eagle, Lath.). 2. Urutaurana (Crowned Eagle, Lath.).
TRIBE II. ASTUR.

DIVISIONS

1. Astur proper.
   Tarsi plated, and rather short.

2. Tarsi short, but reticulated.

3. Nisus, Cuv.
   Tarsis longer, but plated.

1. F. Palumbarius (Goshawk, Lath.). 2. F. Cachinnans (Laughing Falcon, Lath.). 3. F. Musicus, the only known species of Birds of Prey which sings agreeably. F. Nisus (Sparrow Hawk, Lath.).

TRIBE III. MILVUS.

DIVISIONS

1. Elanus, Savigny.
   Tarsi very short, reticulated, covered with feathers half way down. Fig. 40.

2. Milvus proper, Cuv.
   Tarsi stronger, and plated.

1. Le Blac. Le Vaillant. F. Furcatus (Swallow-tailed Falcon, Lath.). 2. F. Milvus (Kite).
FAMILY II. NOCTURNÆ.

GENUS I. STRIX.

SUB-GENERA.

1. Strix, Lin.

Orifice of the ear large. A large circle of fine feathers round the eyes. Small collar of scaly feathers.


Orifice of the ear oval, and not much larger than in other small and imperfect birds. p. 29.

The Sub-genus Strix may be divided according to the egrets, the size of the ears, the extent of the circle of feathers which surrounds the eyes, and some other characters.

Those species which have a large complete disk of fine feathers, encircled by a small collar of scaly feathers, and, between the two, a large orifice of the ear, are more distant in form and manners from the Diurnæ, than those whose ears are small, oval, and covered by fine feathers which come from below the eye. We observe traces of these differences even in the skeleton. (1)

The Sub-genus Noctua has not the wide and deep conch of the ear, the orifice of which is oval scarcely bigger than that of other birds; the disk of fine feathers is less large and less perfect.

(1) Beak compressed, base encircled by a cera, covered entirely, or in part by rude hairs. Nostrils lateral, pierced on the anterior edge of the cera, rounded, open, hid by hairs directed in front. Iris brilliant; wings a little pointed, the first remiges dentated on their exterior edge; the first the shortest, the second not reaching the extremity of the third, which is the longest; their eyes are dazzled by the light of the sun, but they see very well during the day. The bones, hairs, and feathers of their prey, after the flesh has been well digested, are rejected in little balls.—Tem.
SUB-GENUS I. STRIX.

TRIBES.

1. Otus, Cuv.
   Egrets raised at will. Conch of the ear extended in a semi-circle from the beak towards the top of the head, and furnished with a membranous operculum.

2. Ulula.
   No Egrets. Ear and beak of Otus.

   No Egrets. Beak elongated, Tarsi feathered to the nails; ear of Otus.

4. Syrnium, Savigny.
   No egrets. Conch reduced to an oval cavity, not occupying half the height of the skull. Tail short.

5. Bubo.
   Egrets. Conch of the Syrnium, but the circle of feathers around the eye less marked.

§ Egrets wider, further back and difficultly raised from a horizontal line. (6)

1. Strix Ascalaphus. 2. S. Litturata. 3. S. Flammea. 4. S. Aluco. 5. S. Bubo. Fig. 43. (6) Chouette à aigrettes, Vaill. Fig. 42.
SUB-GENUS II. NOCTUA.

TRIBES.

1. **Surnia**, *Dumeril*.
   A long tail, graduated.
   Toes well feathered.
   Fig. 44.

2. **Nyctea**.
   Short tail.
   Toes feathered.
   No egrets.

3. Short tail.
   Toes naked.

4. **Nudipes**.
   Tarsi and toes naked.

5. **Scops**, *Savigny*.
   Ears even with the head.
   Toes naked.
   Egrets.

1. *Siberian Owl*. *Choucou, Vaill.* Fig. 40.
2. *Harfang* (*S. Nyctea*). Fig. 46.
3. *Cayennensis*, etc.
4. *S. Nudipes*, *Daud*.
5. *S. Scops*.

END OF THE FIRST ORDER.
ORDER II.

Passeres.

The character of this Order, the most numerous of the whole Class, seems at first to be simply negative, since it embraces all the Birds which are neither Palmipedes, Grallæ, Scansores, Accipitres or Gallinaceæ; comparison, however, presents a great resemblance in their structure, and such insensible passages from one Genus to another, that it is very difficult to establish the subdivisions.

We find the Singing Birds and, consequently, the most complicated inferior larynxes (p. 7, note 2.) amongst the Passeres.

DIVISIONS.

1. Exterior toe united to the middle toe by one or two joints only.

2. Exterior toe almost as long as the middle toe and united with it as far as the last joint but one, p. 50.

DIVISION I.

FAMILIES.

1. Dentirostres.

Beak notched on each side of the point. Fig. 47, p. 34.

2. Fissirostres.

Beak short, wide, flattened horizontally, slightly crook’d, without notch, deeply cleft. Fig. 77, (1) p. 41.

(1) Their mouth is consequently so very large that they easily swallow the insects which they take in their flight: being entirely insectivorous, they quit us in winter. They approach the tribe Musciæ, and especially the Procnias, whose beak scarcely differs but by the notch.
3. **Conirostres.**

Beak strong, more or less conical, without notch. Fig. 78, p. 42.

4. **Tenuirostres.**

Beak slim, elongated, more or less arched, without notch. Fig. 91, p. 48.

**FAMILY I. DENTIROSTRES.**

**GENERA AND SUB-GENERA.**

1. **Lanius, Lin.**

Beaks conical or compressed, more or less crook'd at the end.

a. **L. Proper. Shrikes.**

Beak triangular at base, compressed at the sides.

α. Beak with the superior edge arched. (1)
β... straight, crook'd only at the end. Fig. 49.
γ... lower mandible much swelled. Fig. 50.
δ (Vanga, Buff.) Beak large, much compressed, point much crook'd, and that of the inferior mandible curved upwards. Fig. 51.

(Plumat.)... straight and slim, with crests of straight feathers. Fig. 52.

b. **Ocypterus, Cuv. Lan-graven.**

Beak conical, rounded, without edge, point very fine, slightly notched on each side. Fig. 164, bis.

Wings, as long and longer than the tail, affording the same flight as the Swallows.

(1) Those in which the point is strong and much crook'd, possess a courage and cruelty which has induced many Naturalists to associate them with the Accipitres or Birds of Prey (See p. 14). The beaks of the Lanii of the other parts of the world diminish in size and become gradually weaker in their points, according to the species, so that it is impossible to establish a limit between this Sub-Genus and that of Turdus: amongst those with the stronger beak is the Fiscal, Fig. 47; amongst those approaching the Turdi, the Oliva. Fig. 48.

Beak large, conical, straight, round at its base, sloping out the feathers of the forehead in a circle, rounded on the back, compressed at the sides, the point crook'd and notched laterally. Fig. 55.


Beak conical, very large, round at the base, not sloping out the forehead, points slightly compressed and crook'd.

e. Graucalus, Cuv. Choucaris, Buff.

Beak less compressed than in the Lanii proper, arched equally in its whole length; the commissure (1) a little arched. Fig. 156.

f. Bethylus, Cuv.

Beak large, short, swelled in every part, slightly compressed towards the end. Fig. 53.


Beak strong, conical, triangular at the base, slightly arched at the upper edge.


Beak short and presenting, when viewed vertically, an enlargement on each side of the base. Fig. 54.

(1) Commissura labiarum. Fig. 154, c.
b. T. Gross-beaks.
   Beak large, swelled, as broad as deep, and the back of the upper mandible rounded.

c. T. Proper.
   Beak shorter than the head, as broad as deep, upper mandible arched. Fig. 56.

d. T. Lóriots.
   Beak arched, sharp-edged.

e. T. Cardinals.
   Beak a little swelled, a projecting obtuse tooth on the side. Fig. 57.

f. T. Ramphocéles.
   Inferior mandible enlarged towards the base. Fig. 59.

   Beak depressed horizontally, with hairs at the base, and the point more or less crook’d and notched.

a. Tyrannus, Cuv.
   Beak straight, long, very strong, upper culminating edge (1) straight, blunt, the point suddenly crook’d. Fig. 61.

b. Muscipeta, Cuv.
   Gnat-snappers.
   Beak long, much depressed, twice as broad as deep, culminating edge very obtuse, point feeble, long hairs at the base. Fig. 62.

(1) "Aêtre supérieure." Fig. 157, a.
c. **Muscicapa, Cuv.**  
Mustachios shorter and beak narrower than in the *Muscipeta*, point a little crook'd. Fig. 157, *bis*.

d. **Gymnocephalus,**  
*Geoff.* Bald-heads.  
Beak of *Tyrannus*, but the culminating edge more arched and a great part of the face naked of feathers. Fig. 60. *Choucas chauve, Buff.*

e. **Cephalopterus, Geoff.**  
Base of the beak furnished with a bunch of raised feathers in the form of a parasol. Fig. 101. *C. Ornatus.*

4. **Ampelis, Lin. Co-tinga.**  
The depressed beak of *Muscicapa*, but shorter in proportion, broad, and slightly arched.

a. **Plauhau.**  
Beak stronger and more pointed. Fig. 61.

b. **C. Proper.**  
Beak weaker.

c. **Cebleyris, Cuv. Caterpillar-catchers.**  
Stems of the feathers of the rump elongated, stiff and pointed.

d. **Bombycivora, Tem. Chatterers.**  
Ends of the stems of the *secondary* feathers of the wing enlarged into a smooth, oval, red disk.

Insectivorous. America.

Wings of males coloured with brilliant azure and purple in the pairing season.

Tail a little forked in the middle, graduated at the sides. No brilliancy of colour. Africa. India.
e. **Procnias**, Hofm.

Beak weaker, more depressed, and cleft to below the eye. Fig. 162.

f. **Gymoderes**, Geoff.

**Naked-necks.**

Beak stronger. Neck partly naked and the head covered with velvet-like feathers.


Beak depressed and sloped at the end, the culminating edgesharp, both mandibles slightly arched in their whole length. Fig. 65.


Beak compressed and arched, but without crook, and the notches less marked than in the *Lanius*. Fig. 96.

a. **Blackbirds.**

b. **Thrushes.**

7. **Pyrrho-Corax**, Cuv.

Beak of *Turdus*, but nostrils covered with feathers. Fig. 102. *Sirin.*

8. **Oriolus**, Lin. (1)

Beak of *Turdus*, but Feet shorter in proportion. Fig. 67.

(1) Linnaeus and his successors united them to the *Cassicans*, which they resemble only in their colours.
   **ANT THRUSHES.**

   Legs long. Fig. 107*.

   Tail short.

10. **Cinclus**, Bechst.
   **WATER OUZELS.**

   Beak compressed, straight, mandibles equally deep, almost in a line, sharpening towards the points, and the superior scarcely arched.

11. **Philedon.**

   Beak compressed, slightly arched in its whole length.

   Nostrils large, covered by a cartilaginous scale; tongue terminated by a pencil of hairs. Fig. 69 and 71, 

   (P. carunculata).


   Beak compressed, very slightly arched and notched: the commissure forming an angle as in the Sturnus. Fig. 73. G. carunculata.

   Feathers of the head generally narrow and a naked space around the eye. Ditto.

   **LYRE-TAILS.**

   Beak triangular at the base, elongated, a little branous, and partly compressed. Fig. 109.

   The males with large tails of 16 feathers, the 2 exterior curved like a lyre. (1)

   (1) They have been referred by some authors to the Gallinaceae, from their size, but their feet are evidently those of Passeres.

Beak compressed, 2 exterior toes united nearly half their length. Tail and feet short. Nasal canals large. America.

a. Rupicina.
A double crest of feathers on the head, like a fan. Fig. 111.

b. Pipra, Cuv.
Small. Fig. 68. Remarkable for their lively colours: live in troops in damp forests.

15. Motacilla, Lin.

Beak straight, slender, like a bodkin.

a. Saxicola, Bechst.
Beak depressed, rather large at the base. Nest on or under the ground. Fig. 74.

b. Sylvia, Wolf; Ficedula, Bechst.
Beak rather narrower at the base. Solitary: nest in holes. Live on insects, worms, and berries. Fig. 165.

c. Curruca, Bechst.
Beak straight, slim, a little compressed in front, the culminating edge a little curved towards the point. Fig. 158.

a (Nightingales) Nest in trees.
β ... bushes.

d. Regulus, Cuv. Wrens.
Beak perfectly conical and very sharp; its sides, when viewed vertically, appearing rather concave. Fig. 75.

e. Troglodytes, Cuv.
Beak still slighter than in the Regulus and a little arched.
\( f \): Motacilla, Bechst.
Wag-tails.
   
   A long tail, which they move up and down incessantly.
   
   Legs long; the scapular feathers sufficiently long to cover the end of the wing when folded.

\( g \): Lavandieres.
   
   Nail of the great toe curved as in all the other Motacilæ except the Budytæ.

\( p \): Budytæ.
   
   Nail of the great toe elongated and a little arched.
   
   Live in pastures; pursue insects.

\( g \): Anthus, Bechst.
Beak slim.
   
   Nail of the great toe Scapular feathers of long.
   
   Ordinary length.

FAMILY II. FISSIROSTRES.

genera and sub-genera.

\( § \): Diurnæ. Close, firm, plumage.

1. Hirundo, Lin.
   
   Wings extremely long, flight rapid.

   
   Feet very short; the great toe directed forwards and the middle and exterior toes with only three joints like the inner.
   
   Tail forked.
   
   Stemmum without notch (1). Nest in holes of walls and rocks; climb along the smoothest surfaces.

   
   Toes and sternum as in the generality of Passeres.

(1) Ordinarily there is one notch on each side of the lower edge.
(42)

Passeres.

1. Tail forked. (1) Toes feathered.
2. Tail almost square.
3. Tail square with the pen feathers terminating in a point.

§§ Nocturnae. Light, soft, plumage shaded with grey and brown.


Beaks more cleft, with the exterior toes with only 4 joints, and the nostrils, at the base, in the form of small tubes; eyes short membrane. Feet short, tarsi united by a gulphed in their large beak when flying produces a peculiar buzz.

a. Nail of the middle toe dentated on its inner edge.

b. Nail not dentated. Tail square.

3. Podarges.

Beak stronger. Fig. No membrane between the toes.

FAMILY III. CONIROSTRES.

Genera and sub-genera.


Nail of the great toe straight, strong, andquent the ground. Granivorous; much longer than the others.

a. Beak straight, moderate, pointed.

b. Beak so large as to approach that of the Fringilla. Fig. 78.

c. Beak elongated, a little compressed and arched, approximating them to the Upupæ and Promerops.

(1) The Salangane (H. esculenta, Lin.), a small species of the Indian Archipelago, is celebrated for its nest of a whitish gelatinous substance, made, as it is believed, from the spawn of fish or some scum from the surface of the sea; the restorative virtues attributed to these nests have made them an important article of commerce in China; they are dressed like mushrooms.

Beak slender, short, conical, straight. Fig. 70.

Small hairs at the base of the beak, and the nostrils hidden by feathers.

a. Parus proper.

b. Moustaches.

The end of the superior mandible curving on the other.

c. Remiz.

Beak more slim and pointed.


Beak conical, short, straight, superior mandible narrower, entering within the inferior. Fig. 72.

A projecting, hard, tubercle in the palate.

4. Fringilla, Lin.

Beak conical, more or less large at the base, but the commissure not angular.


Beak as large as in the Cassicans, but the commissure straight and the superior mandible slightly swelled. Fig. 79.

b. Pyrgita, Cuv.

Beak shorter, and a little swelled towards the point only. Fig. 159.

The greater part of those of the Old Continent make their nests with much art, interlacing sprigs of herbs (1).

(1) The nest of the Toucan Courvi (Laxia Philippina) is suspended, in the form of a ball, with a vertical canal, open underneath, which communicates sideways with the cavity containing the young.
c. *Fringilla, Cuv. Chaf- 

Beak less arched than in the *Pyrgita*, and a little stronger and longer than in the *Linaria*. Fig. 103. 104.

d. *Carduelis, Cuv.*

Beak conical and entirely free from swell. Fig. 80.

a. *Chardonnerets.*

Goldfinches.

Beak longer and sharp.

β. *Linaria, Bechstein.*

Linnets.

Beak shorter and obtuse.

e. *Vidua, Cuv. Widow Birds.*

Beak of *Linaria*, sometimes a little swelled at the base. Fig. 95.

f. *Cocothraustes. Gross-

Beak conical and large.

g. *Pitylus, Cuv.*

Beak very large, a little compressed, arched above, and sometimes with a projecting angle in the middle of the edge of the upper jaw.

h. *Pyrrhula. Bull-

Beak rounded and swelled in every part. Fig. 81.

5. *Loxia, Briss. Cross-

Beak compressed; the mandibles so much curved that the points cross each other. Fig. 82.
6. Corythus, Cuv.  
Hard-beaks.
Beak swelled in every part; the point of the upper curved over the lower mandible. Fig. 85.

7. Colius, Gm. Colies.
Beak short, thick, conical, a little compressed; the two mandibles arched without crossing.

8. Glaucopis, Forster.  
Calleas, Bechst.  
Wattle-birds.
Upper mandible swelled.

Beef-eaters.
Beak cylindrical at the base, swelling towards the middle; the point blunt. Fig. 84.

Beak large, conical, enlarged at the base, sharpened into a point; the commissure in a broken line or forming an angle as in the Sturni.

a. Cissicus proper.
Base of the beak rises on the forehead and slopes out the feathers in a semi-circle. Fig. 400.

b. Icterus.
Slope of the forehead angular and the beak arched.

The great toe has the power of directing itself forwards. Pen-feathers of the tail graduated, and very long.

A fleshy caruncula under the base of the beak. Fig. 83.

Small round nostrils, pierced at the sides.
c. Xanthornus.
Slope angular, but beak straight.

d. Dacnis, Cuv. Pit-Pits.
Beak conical and sharp.

Beak of Xanthornus, but depressed towards the point. Fsg. 94.

Beak straight, prismatic, pointed for cutting the bark to get at the worms. Fig. 98.

Beak strong, more or less flattened at the sides.

a. (1) Corvus Proper.
Beak stronger in proportion and the culminating edge more arched than in the others. Fig. 86. C. Corax.

Ditto. Fig. 63. Tail long and graduated.

Mandibles rather short and terminating in a sudden curve. Fig. 87.

(1) The Corbeau (C. corax, Lin.) in Cuvier, is our Raven; the Corneille (C. corone, Lin.), the Carrion Crow; the Freux (C. frugilegus, Lin.), the Rook; the Corneille Mantelee (C. cornix, Lin.), the Hooded Crow; the Choucas (C. monedula, Lin.), the Jackdaw.—Regne Animal, t. i. p. 397.
d. Caryocatactes, Cuv.  
Nut-crackers.  
Mandibles equally pointed, straight, with-out curve. Fig. 58.

e. Temia.  
Beak round, the base furnished with velvet-like feathers. Fig. 108.

Beak strong, compressed towards the end, the point a little crook'd.  
Nostrils oblong, not covered by the feathers.  
Feet short and strong.  
Two notches on each side of the lower edge of the sternum.

a. Coracias proper.  
Beak straight, and deeper than broad. Fig. 88.

b. Colaris, Cuv.  
Beak shorter, more arched, and enlarged at its base, so as to be broader than deep. Fig. 89.

c. Eulabes, Cuv.  
Beak of Coracias.  
Head partially naked of feathers, with fleshy prominences in stead. Fig. 116.  
Velvet-like feathers, advancing to the edge of the nostrils as in the Paradisaea.

15. Paradisaea, Lin.  
Birds of Paradise.  
Beak of Corvus. Fig. 110.  
Feathers covering the nostrils, velvet-like, and often of a metallic lustre; those of different parts of the body singularly developed.
FAMILY IV. Tenuirostres.

GENERAE AND SUB-GENERAE.

1. **Upupa, Lin. Hoopoes.**
   a. **Fregilus, Cuv.**
      Beak longer than the head. Fig. 155. Nostrils covered with feathers directed forwards.
   b. **Upupa proper.**
      A double row of feathers on the head, erected at will. Fig. 418.
   c. **Promerops, Briss.**
      Tongue extensible and forked. Fig. 115. No crest. Tail very long; live on the juices of flowers.
   d. **Epimachus, Cuv.**
      Scaly or velvet-like feathers covering a part of the nostrils. Fig. 161.

2. **Certhia, Lin. Creepers.**
   a. **Certhia proper.**
   b. **Dendrocopitis, Her. Picucules.**
      Beak stronger, and broader transversally. Ditto.
   c. **Tichodroma, Illig.**
      Beak triangular, depressed at the base, very long and slim. Fig. 417. Tail not worn. Use their long nails, only, in climbing, Fig. 417.
   d. **Nectarina, Illig. Sugar-birds.**
      Beak moderately long, arched, pointed and compressed as in the Certhia. Fig. 414. Ditto.
e. **Dicæum, Cuv.**
Beak sharp, arched, not longer than the head, depressed and enlarged at the base. Fig. 113.

f. **Hoerotaria, Vaill.**
Beak extremely elongated, curved almost in a semi-circle. Fig. 93.

g. **Cinnyris, Cuv. Sugar-eaters.**
Beak long and slim, the edges of both mandibles finely dentated; tongue terminated in a fork and elongating. Fig. 93.*

3. **Trochilus, Lin. Humming-birds.**
Beak long and slim; tongue elongating and bifid. Plumeage of a metallic lustre. Live on flowers and insects. No notches in the sternum.

a. **Colibris.**
Beak arched. Fig. 99. *T. cinereus.*

b. **Orthorhynchus, Lacep. Fly-birds.**
Beak straight. Fig. 97. *T. minimus.*
DIVISION II. SYNDACTYLE.

   Beak triangular at its base, elongated and slightly arched, terminating in a sharp point. Fig. 119.

2. Prionites, Illig.
   Beak stronger, edges indented, tongue barbed. Fig. 92.

   Beak longer than Merops, straight, angular, pointed; tongue very short. Fig. 120.

   Beak as Alcedo.

5. Todus, Lin. Todies.
   Beak flattened horizontally, obtuse at its extremity. Fig. 106.

   Beak enormous, notched, surmounted by prominences sometimes equaling it in size. Fig. 105. C. unicornis.

Feet short. Fig. 119. Two notches on each side of the lower edge of the sternum.

Feet shorter than Merops. Fig. 120. Tail very short. Sternum as Merops.

Inner toe not apparent.
ORDER III.

Scansores. Climbers.

These are Birds whose exterior toe directs itself backwards like the great toe, affording a very solid support, by which some of them profit for clinging to and climbing the trunks of trees. They have consequently received the name of Climbers, although it is not strictly applicable to all; whilst several Birds which climb do not belong to this Order by the disposition of their toes.

The Scansores generally rest in the holes of old trees: their flight is moderate; their food, like that of the Passeres, generally consists of insects or fruits, according to the strength of their beak; some, as the Pici, have peculiar means for obtaining it.

The sternum of most of the Genera has two notches behind (Fig. 121), but in the Parrots there is only a hole (Fig. 122), not unfrequently filled up.

GENERAE AND SUB-GENERAE.


Briss.

Beak elongated, pointed, upper culminating edge sharp. Feet short, exterior toes united in a great part of their length. Plumage of a metallic lustre. Live isolated in damp woods. Insectivorous.

a. Beak longer and perfectly straight. Fig. 123. G. ruficauda. America.

b. Beak shorter, larger, and a little arched. Fig. 124. Jacamerops or G. grandis. Indian Archipelago.

c. No upper culminating edge to the beak. Fig. 126. Great Jacamar, Vaill.
2. **Picus, Lin. Woodpeckers.**
   
   Beak long, straight, angular, compressed in a wedge at the extremity, for clearing the barks of trees. Tongue protractile, Tail with 10 pen-feathers, the stems stiff and elastic, supporting them as a buttress in climbing. Fig. 125.

   a. P. Proper.
   
   Fig. 125.


   Only 2 toes before and 1 behind. Fig. 127.

   c.

   Beak slightly arched, approaching that of the Cuckows. Fig. 129.

3. **Yunx, Lin. Torcils. Wry-necks.**

   Beak straight, pointed, almost round and without angles. Fig. 166.

   Tongue protractile, Tail with pen-feathers of the ordinary form.

4. **Cuculus, Lin. Cuckows.**

   Beak moderate, somewhat cleft, compressed, slightly arched.

   Tail rather long.

   Birds of passage. Insectivorous.

   a. C. Proper.

   Beak of moderate length. Fig. 130. (2)

   Tarsi short. Fig. 132. Tail with 10 pen-feathers.


   Tarsi long. Fig. 134.

(1) The tongue, pushed out by the elastic cartilaginous prolongations of the os hyoidis (Fig. 128, c.), elongates considerably beyond the beak (Fig. 125) and is imbued with a viscous juice, furnished by large salivary glands: it is drawn in by two muscles, rolled like ribbons around the trachea, the cornea of the os hyoidis reascending under the skin and upon the head as far as the superior base of the beak (Fig. 128.), and the sheath of the tongue folding on itself at the bottom of the gullet.

(2) There are African species with the beak more depressed (Fig. 131. C. auratus) and others with the beak deeper vertically. (Fig. 132. C. Tachirou.)
c. **Cousals, Vaill. Cen-tropus, Illig.**

- Nail of the great toe long, straight, pointed. Fig. 135.

**d. Courols, Vouroudri-ous, Vaill.**

- Beak large, pointed, scarcely arched. Fig. 137.
- Nostrils pierced obliquely in the middle. Tail with 12 pen-feathers.

**e. Indicators, Vaill. Ho-ney Cuckows.**

- Beak short, deep, almost conical. Fig. 136.
- Ditto.

**f. Barbacous, Vaill.**

- Beak conical, elongated, slightly arched at the end. Fig. 138.
- Fine feathers or stiff hairs at the base of the beak. Tail a little graduated and forked.

5. **Malcohas, Vaill.**

- Beak very large, round at the base; a naked space around the eye.

a. Nostrils round, and towards the base of the beak. Fig. 139.

b. Nostrils narrow, and near the edge. Fig. 140.

6. **Scythrops, Lath. Psittaceous Horn-bills.**

- Beak larger and longer than the Malcohas, with two shallow longitudinal furrows on each side. Fig. 141.
- Nostrils round; circle around the eye naked. New-Holland.

7. **Bucco, Lin. Barrets.**

- Beak large, conical, swelled at the sides of the base.

5 bundles of stiff hairs, directed forwards; 1 behind each nostril, 1 on each side of the base of the lower jaw, and the 5th under the symphysis. Wings short.

Ceylon.

Frugivorous.
a. **PoGONiAs, Illig. Barbara**.

Two deep notches on each side of the upper mandible, and its culminating edge blunt and arched; the lower mandible furrowed transversally underneath. Fig. 142.

b. **BUCCO proper**.

Beak simply conical, slightly compressed; culminating edge blunt, and a little raised in the middle. Fig. 143.

c. **Tamatias**.

Beak more elongated and compressed, with the extremity of the upper mandible curved downwards. Fig. 144.

8. **Trogon, Lin. Curucuis**.

Beak short, broader than deep, curved from the base; upper culminating edge arched, blunt, and the lateral edges notched. Fig. 145.

9. **GROTOPflAGA, Lin. Anis**.

Beak large, compressed, arched, without notches, having a vertical sharp crest. Fig. 146.

10. **Ramphastos, Lin. Toucans**.

Beak enormous, almost as thick and as long as their body, slight with barbs on each and cellulous interiorly, arched towards the end, irregularly notched at the lateral edges.
a. R. Proper.
   Beak larger than the head. Fig. 147.

   Beak less than the head, covered with a less solid horn. Fig. 148.

   Beak large, hard, solid, rounded entirely, encircled at its base by a membrane wherein the nostrils are pierced.

   (1)

   a. Aras.
      Cheeks naked of feathers.
      America.

b. Parrakeets.
      Circle around the eye naked.

   f. Arrow-tailed Parrakeets.
      The two middle pen-feathers much longer than the others.

   γ.
      Tail enlarged towards the end. (2)

   δ. Parrakeets proper, Vaill.
      Tail almost equally graduated.

(1) This membrane and the form of their tongue, give them great facility in imitating the human voice. Their inferior larynx is very complicated, and furnished with three peculiar muscles on each side, which also contributes to the above faculty; their powerful jaws are put in action by a greater number of muscles than those of other birds. Their intestines are very long and they have no cæcum.

(2) The name of Loris has been given to those species the ground of whose plumage is red.
c. Cockatoos.

A crest of long narrow feathers, ranged in 2 lines and raised or lowered at will. Fig. 149.

The more remote parts of India.

β. Crest more simple, less moveable, and composed of large feathers of moderate length.


γ. Pendent feathers, with fine barbs towards the end, instead of a crest.

δ. No crest.

d. Parrakeets with trunks, Vaill.

Cheeks naked; the upper mandible enormous, the lower very short and unable to close entirely. Tongue cylindrical, terminated by a small horny gland, cleft at the end and elongating considerably. Fig. 150.

Crest of long and narrow feathers. Tarsi short and flat, rested on when walking. Fig. 150.

East-Indies.

e. Pezoporus, Illig.
P. Ingambes, Vaill.

Beak weaker. Tarsi more elevated and nails straighter than in the other Parrakeets. Fig. 151.

12. **Touracos. Corythaix, Illig.**

   Beak not ascending on the forehead. A crest, which they have the power of elevating. Fig. 153. *P. Afri-canus*, Lath.

13. **Musophaga**, Isert. *Banana-eaters.***

   Beak forming a disk which covers part of the forehead. Fig. 152. *M. violacea*, Lath.

---

(1) They have the wings and tails of the Hoecos; their beak is short, the upper mandible swelled, and there is a short membrane between the front toes, but the exterior toe is often directed backwards; their nostrils are simply pierced in the horn of their beak, the edges of the mandible are dentated, and the sternum, at least that of the Touraco, has not the great notches ordinarily found in the Gallinaceæ.
ORDER IV.

Gallinaceaæ,

So named from their affinity to the domestic Cock, like which they have, generally, the anterior toes united at their base by a short membrane, and notched along their edges; the upper mandible vaulted; the nostrils, pierced in the large membranous space at the base of the beak, covered by a cartilaginous scale; the gait heavy; the sternum diminished by two notches, so broad and deep that they occupy almost the whole of its sides, its crest terminating obliquely in front, so that the sharp point of the furcula is only joined to it by a ligament (Fig. 167.); all which circumstances, by weakening their pectoral muscles considerably, render their flight difficult. Their tail has mostly 14 and sometimes even 18 pen-feathers, with the exception of the Alectors. Their inferior larynx is very simple, consequently none of them sing agreeably; they have a very wide crop and a very powerful gizzard. Excepting the Alectors, they lay and hatch their eggs on the ground, on heaps of straw or grass rudely scattered. Each male has generally several females, and does not interfere either with the nest or the care of the young, which are generally numerous, and, most frequently, able to run on coming out of the shell.

This very natural family, remarkable for having given us the greater part of our farm-yard fowls and much excellent game, can only be divided into genera by some unimportant characters taken from the appendages of the head.

GALLINACEÆ.

GENERA AND SUB-GENERA.

1. Pavo, Lin. Peacocks.

The tectrices of the tail, in the male, long- or than the pen-feathers, rise and spread.

a. P. Proper.

Spots like eyes in the extremities of the feathers.
b. Polyplectrum, Tem.

Crests.

Spots of the tectrices of the tail (less elongated) double, and, like those of the scapularies, in the form of mirrors.


The head and upper part of the neck covered with a nippleskin, bare of feathers; an appendage under the throat, and another on the forehead; a pencil of hairs hanging from the bottom of the neck of the adult male.

The tectrices of the tail shorter and stiffer, but rise and spread like those of the Peacock.

From America.


Tail with 12 pen-feathers, stiff, broad, and rounded.

No spurs.


Mitoux.

Beak strong, the base covered with a skin, sometimes of a lively colour, in which the nostrils are pierced. Fig. 168. C. globicera.

A crest of round, long, narrow feathers, curling from the base.

America.

b. Pauxi. Ourax, Cuv.

Beak shorter and stronger. Fig. 169.

Base of the beak, and the greater part of the head, covered with short velvet-like feathers.

c. Penelope, Merrem. Guans or Quans. Jacobs.

Beak thinner than Crax. Fig. 171. P. cresta.

Circle around the eye naked, as well as the lower part of the throat.

Tracheal artery descends, under the skin, behind the posterior edge of the sternum.

Scarcely any of the Tracheal artery descends towards the abdomen.


Beak of the Pauxis. Crest of long, narrow, fine feathers. No membrane between the base of the toes.


Males with a horn behind each eye. Fig. 173. A large, loose, naked, extensible bag, under the throat. Tarsi with spurs, in both sexes.


Cheeks partly bare (or the circle around the eye) and with a red skin.

a. Gailus. Cocks. (1)

A fleshy and vertical crest; lower mandible with fleshy gills on each side.

b. Phasianus proper. (2)

Tail long, graduated; the pen-feathers forming 2 culminating planes.

c. Crested Pheasants.

Egrets. Fig. 172. P. ignitus. The lower edge of the naked skin of the cheeks spurs projecting like gills.

(1) Amongst the wild species are, the G. Sonneratii, in which the feathers of the neck of the male expand towards the base in three successive disks of a horny matter (Fig. 170); the G. Bankiva, Tem., which has the crest dentated like the preceding, with long pendent feathers of a golden red on the neck; the Phas. varius with an entire crest and a small dew-lap, without lateral gills, under the throat.

(2) The P. pictus and P. Nycthemerus are from China; the P. Argus from the south of Asia.
d. **Lophophores, Tem.**

Beak long, strong, curved, broad at the base; the superior considerably exceeding the inferior mandible, which is hidden. Fig. 474, *bis. L. Cuvieri*.

**Egrets.**

Tail ordinary; strong spurs.

---

e. **Cryptonyx, Tem.**

Only the circle around the eye naked. Fig. 175. Great toe without a nail. Fig. 175.

**Numida, Lin. Pintado.**

Head naked, generally surmounted with a callous crest. Fig. 176. *N. meleagris*.

**No spurs. Tail short, pendant.**

From Africa.

---

6. **Numida, Lin. Pintado.**

- **Cryptonyx, Tem.**
- **Numida, Lin. Pintado.**
- **Tetrao, Lin. Grous.**

---

7. **Tetrao, Lin. Grous.**

- **Tetrao, Lath.**
- **Tetrao, Urogallus.**

Toes naked. Fig. 178. Tarsi covered with feathers, and without spurs.

**Tail round or forked.**

---

b. **Lagopus, Briss.**

Toes covered. Generally become white in winter.

**Tail round or square.**

---

c. **Pterocles, Tem. Gang. Attagen.**

Toes naked. Circle of the eye naked, but not red. Great toe very small. Fig. 177.

**Tail pointed.**

---

d. **Perdix, Briss. Partridges.**

Toes naked. Tarsi naked.

**Spurs stronger.**

**Tail more developed.**

---

a. **Francolines.**

Beak longer and stronger. Fig. 181.

---

f. **Perdix Proper.**

Beak weaker. Fig. 182.

**Spurs short or simple tubercles in the males, wanting in the females.**
e. **Coturnix. Quails.**

Less than the *P. Proper*. Beak more slender. No spurs; band above the eye whitish.

Fig. 184.

f. **Collins. American Quails.**

Beak larger, shorter, more swelled. Tail shorter. Emigrate across the Mediterranean.

Fig. 183.

8. **Tridactyles, Lacép. Hemipodius, Tem.**

Beak compressed, swells a little under the lower mandible.

8. **Turnix, Bonnat. Ortgyis, Illig.**

Toes separated to the base, and without the small membranes. Tail more expanded.

Fig. 185.

b. **Syrbhaptes, Illig.**

Wings extremely long and pointed. Tail more expanded. Polygamous.

Fig. 186. T. paradoxus. In sandy countries.


Beak long, slim, blunt at the end, with a small furrow on each side; the nostrils pierced in the middle, and penetrating obliquely backwards. Tail more expanded. Polygamous.

Fig. 187.

Neck slender, elongated, covered with feathers with fine barbs and frizzed at the ends. Scarcely any tail; wings short; the great toe, reduced to a small spur, cannot touch the ground.

America.

10. **Columba, Linnaeus. Pigeons.**

Beak of Gallinaceæ. No distinct membranes between the feathers. Tail with 12 membranes between the feathers.
a. **Columbi - Gallines**, Vaill.

Beak slim, flexible. Tarsi more elevated. Seek their food on the ground. Live in troops. Fig. 179. *C. carunculata*.

b. **Doves**.

Ditto. Tarsi shorter.

c. **Colombars, Vaill. Vignago, Cuv.**

Beak larger, solid, Tarsi short; feet wide and well edged. Frugivorous. The great woods of the torrid zone of the Old World. Fig. 180. *C. Abyssinica*.
ORDER V.

Grallae.

The Grallæ, Shore-Birds or Waders, take their name from their habits and the formation which gives rise to them. We recognise them by the nudity of the lower part of their thighs, and very frequently by the length of their tarsi, which circumstances enable them to enter the water to some depth without wetting their plumage, and to wade and fish in it by means of their neck and beak, both of which are of a length proportionate to their legs. Those with strong beaks live on fish or reptiles; those whose beaks are weaker, on worms and insects. A few partly content themselves with grains and herbage, and these only live far from the water. The exterior is most frequently united at its base to the middle toe, by means of a short membrane; sometimes there are two similar membranes, at others they are entirely wanting and the toes are separate; rarely, they are bordered all along or palmated to the end; lastly, the great toe is wanting in several Genera: all which circumstances render their mode of life more or less aquatic. Almost all these Birds, if we except the Ostriches, have long wings and fly well. They extend their legs behind when they fly, contrary to other Birds, who fold them under the belly.

FAMILIES.

1. Brevipennes.
   Wings too short for flight. Pectoral muscles very slight, but those of sternum enormous.

2. Pressirostres.
   Beak moderate. Fig. 189. Legs elevated; great toes too short to reach the ground, or none.

3. Cultirostres.
   Beak large, long, strong, generally with sharp edges, and pointed. Fig. 199.
4. **Longirostres.**

Beak slim, long, and weak. Fig. 208.

5. **Macrodactyla.**

Beak more or less compressed, never so slim or weak as in the Longirostres. Fig. 222.

**Glareola, Gm. Pratincoles. Sea Partridges.**

Beak short, conical, entirely arched, somewhat cleft. Fig. 224.

**Phoenicopterus, Lin. Flamingos.**

Neck as slim and as long as their legs; head small; the inferior mandible oval, bent longitudinally in a demi-cylindrical canal; the superior mandible oblong and flat, bent transversely in the middle to join the other exactly. Fig. 220.

The description of the Family is that of the only Genus.

7. **Phoenicopterus, Lin. Flamingos.**

Legs excessively long, 3 front toes palmated to the end, the great toe extremely short. The five transversal plates which edge their mandibles, and the fleshy thickness of their tongue, approximate them to the Anas.

In all parts of the world, from lat. 40° to 45°.

The description of the Family is that of the only Genus.

**FAMILY I. BREVIPENNES.**

**Genera And Sub-Genera.**

1. **Struthio, Lin. Ostriches.**

Beak depressed horizontally, of moderate length, blunt at the end; tongue short, and rounded like a crescent; eyelids with hairs.

Wings covered with loose flexible feathers, and long enough to accelerate their course. An enormous crop, and a considerable ventricle between the crop and the gizzard. Coc-cum long, and a vast cloaca wherein the urine accumulates.
Grallæ.

a.
From 6 to 8 feet high. 2 toes; and the exterior, one half shorter than the other, without a nail. Eggs nearly 3lbs. weight. Africa.

b. Rhea, Lath.
From 3 to 4 feet high. 3 toes, all with nails. America.

Wings shorter, and useless in their course. 3 toes, all with nails; the barbs of their feathers resembling horse-hair.

a.
Beak compressed laterally. Head surmounted with a bony prominence covered with a horny substance. Nail of the inner toe much the largest. Indian Archipelago.

b.
Beak depressed. No casque. (1) Nails equal.

FAMILY II. PRESSIROSTRES.

GENERAE AND SUB-GENERAE.

Beak moderate, the superior mandible slightly pressed, enlarged at the end. Fig. 193. Otis tarda.

2. Charadrius, Linn. Plovers.
Beak moderate, compressed, enlarged at the end. Fig. 223.

(1) The Genus Didus (Dodo) of Latham, comprehends the D. Ineptus, a species which has disappeared, but a head of which, much injured during a lapse of 150 years, is preserved in the Ashmolean Museum, at Oxford (Fig. 188), and a foot in the British Museum (Fig. 188); the D. Solitarius, which rests on the single testimony of Leguat, who has disfigured even the Lamantin, Hippopotamus and other well-known animals; the D. Nazarenus, seen by Cauche only, who, stating that it has 3 toes, considers it to be the same as the D. Ineptus, which has 4.
a. **Oëdicnemus, Cuv.**

End of the beak enlarged above and below. Fig. 190.
Nasal canal extending only one half the length of the beak.
Feet reticulated. Dry, stony soils.

b. **Charadrius proper.**

End of the beak enlarged above only. Fig. 489.
Nasal canal extending two-thirds the length of the beak.

3. **Tringa, Lin.**

Beak of the Plovers.

a. **Squatula, Cuv.**

Sandpipers.

Beak enlarged underneath.
Great toe so small as not to touch the ground.

Feet reticulated.

b. **Tringa proper.**

Lapwings.

Great toe scarcely perceptible; nasal canal short.

Tarsi partly plated.

4. **Hæmatopus, Lin. Sea-pies, Oyster-catchers.**

Beak rather longer, straight, pointed, compressed in a wedge, strong enough to open bivalve shells. Fig. 194. Hæmatopus ostrolegus.
Nasal canal deep, half the length of the beak, only 3 toes.
Tarsi reticulated; with the nostrils pierced in the middle like a small crack.

5. **Cursorius, Lac.**

Tachydrumus, Illig.

Beak more slim, equally conical, arched, without furrow, and moderately cleft. Fig. 191.
No great toe.
Legs elevated; 3 toes.
Dichoöophus, Illig.  
Beak large, more crook'd, cleft to below the eye. Fig. 196. C. de Margrave.  
Great toe not reaching the ground.  
Legs plated, very long; toes extremely short, a little palmated at the base.

FAMILY III. CULTIROSTRES.

GENER A AND SUB-GENERA.

Beak straight, but little cleft; the membranous nasal canal, broad and concave, occupies half the length.  
Legs plated; the great toe scarcely reaching the ground.  
Granivorous and frugivorous.  
From America.

Trumpeters.  
Beak short.  
Head and neck covered with down only, circle around the eye naked.  
Granivorous and frugivorous.  
From America.

Beak shorter. Fig. 199. Ardea Pavonia, L.  
Africa.

c. Grus proper.  
Beak as long and longer than the head.  

§ More carnivorous; beak stronger; toes larger.

Beak resembling Nostrils pierced towards the base of the most without membranes. Piscivorous.  
4 toes, long, and all-spoons joined by their concave sides; the superior mandible with two parallel furrows towards the point. Fig. 192.  
C. Cochlearia.
Beak cleft to below the eyes, which are in a naked skin extending to the beak.

a. Ardea proper.
Neck very slim, with long pendant feathers at the base. Fig. 195.

b. Egrets.
The feathers of the lower part of the back singularly long and fine.

The feathers of the neck loose and far apart.

Stiff slender feathers in the occiput of the adult male.

§§ Beak longer, smoother; webs, almost equal and rather thick, between the bases of the toes.

Beak large, moderately cleft; tongue extremely short. Fig. 202.

4. No nasal canal or furrow; nostrils pierced towards the base of the beak.

Beak slightly curved in the upper part. Fig. 203.

5. Ditto.

Beak compressed, the culminating edge sharp and enlarged towards the end of the beak. Fig. 204.

Mandibles join only at their base and points, having a void interval in the middle of their edges, appearing to be partly the effect of detrition. Fig. 205.


Beak as *Ciconia*, but the back rounded, the point curved, and slightly notched on each side. Fig. 206.


*Spoon-bills.*

Beak long, flat, broad, like a spatula; tongue small. Fig. 214.

---

**FAMILY IV. LONGIROSTRES.**

**Genera and Sub-Genera.**

1. *Scolopax.*

a. *Ibis, Cuv. (1)*

Beak arched, weaker than that of the *Tantalus*, without notch at the point, almost square at the base. Fig. 208. *S. Rubra.*


Beak arched, round in the whole length, weaker, the upper end passing the lower. Fig. 213.

---

(1) M. Cuvier (*Recherches sur les Ossomens Fossiles*, t. 1. p.) shews the *Ibis sacer* of the Egyptians to be the *Numenius Ibis* or *Tantalus OEthiopicus* of Latham, Fig. 209; Fig. 210 was drawn from the head of a mummy found at Thebes, and now in the Gallery of the Museum at Paris; Fig. 207 is from one of the temples in Upper Egypt.
c. Phœopus, Cuv. Whimbrels.

Beak depressed towards the end. Fig. 216.

Furrow of the nostrils almost the whole length of the beak.


Ditto.

Ditto.

No great toe.

e. Scolopax proper. Woodcocks. Snipes.

Beak straight, the end of the upper mandible (enlarging to surpass the lower) soft, very sensible, and drying into a point after death. Fig. 201.

Ditto, with a simple furrow on the lower mandible.

Head compressed; eyes large and very far back.

f. Rynchœa, Cuv.

Mandibles nearly equal, arched slightly at the ends. Fig. 197.

Ditto, but no furrow on the lower mandible.

Spots, like eyes, on the pen-feathers of the wings and tail.

Africa. India.

g. Limosa, Bechst. Godwits.

Beak straight, or slightly arched towards the upper part; the end depressed and blunt. Fig. 200.

Ditto.

Form more slender and legs longer than in the Scolopax.


Beak depressed at the end, not longer than the head.

Ditto.

Toes slightly bordered, without webs at their base; great toe scarcely long enough to reach the ground (Fig. 221), gait and form heavy.


Beak of Calidris, but a little longer than the head.

Ditto.

Toes without borders or webs.
Grallae.

k. Machetes, Cuv. Ruffs and Reeves. Combatants.
   Beak and gait of Calidris.
   Web between their exterior toes as large as in the Limosa.
   Feet yellowish.

   Ditto.
   No great toe.

m. Phalaropus, Briss.
   Beak flatter than in the Calidris, the furrows the same. Fig. 198.
   Toes edged with very large membranes, like the Fulicae.

   Beak conical, pointed, not depressed; nasal canal half the length. Fig. 217.
   Great toe scarcely touches the ground.

   Beak slim, round, pointed, furrow of the nostrils half the length; the upper mandible a little arched towards the end. Fig. 219. S. glottis.
   Ditto.
   Exterior web very evident.

p. Loripes, Cuv.
   Ditto.
   Toes of Phalaropus.

   Beak of Totanus, but more pointed.
   No great toe.
   Legs excessively slim and long, reticulated, and the bones so weak as to render their walk painful. Fig. 212.

   Beak long, slim, pointed, smooth, elastic, with a strong curve upwards. Fig. 215.
   Great toe much too short to reach the tarsi elevated.
FAMILY V. MACRODACTYLIA.

GENERAE AND SUB-GENERAE.

§ Wings armed with spurs.

   Beak moderately long, slightly enlarged at the end. Fig. 222. One spur to each wing. Four toes, very long, separated to the roots; the nails, especially that of the great toe, very long and pointed. Fig. 222.

   Beak little cleft and compressed, not enlarged, and the superior mandible slightly arched. Fig. 218. P. cornuta. Two strong spurs to each wing. Toes without webs, nails strong, that of the great toe straight. Fig. 218.

§§ Wings unarmed.

   Beak without frontal plate.
   a. Rallus, Bechst.
   Beak longer. Fig. 225.
   b. Crex, Bechst.
   Beak shorter. Fig. 226.

4. Fulica, Lin.
   Beak with a frontal plate covering the forehead.
   Fig. 211.
   Border of the toes narrow.

   Beak deeper in proportion to its length; Border of the toes scarcely evident.
   frontal plate considerable.

c. Fulica proper, Briss.
   Coots.
   Beak short. Border of the toes wide and festooned.
ORDER VI.

Palmipedes,

Are strongly characterised by their feet formed for swimming, that is, set in the hinder part of their body (Fig. 1), with very short and compressed tarsi, and palmed between the toes.

Their close, glossy plumage, imbued with an oily juice and furnished with a thick down next the skin, protects them from the water on which they live. They are the only Birds in which the length of the neck exceeds (sometimes considerably) that of the feet (Fig. 1), having frequently to fish in the depth whilst they swim on the surface of the water. Their sternum is very long, protects the greatest part of their viscera, and has but one notch on each side, or an oval hole furnished with membranes. Their gizzard is generally muscular, their cæcums long, and the inferior larynx simple, with the exception of one Family, in which it is swelled into cartilaginous capsules.

FAMILIES.

1. Brachypteres.

   Wings exceedingly short; fly very ill, or not at all.

2. Longipennes.

   Wings very long; flight extensive. Great toe free or none.

3. Totipalmes.

   Great toe united with the others in a single membrane.
4. **Lamellirostres.**

Beak thick, covered with a soft skin rather than a true horn; the edges with plates or small teeth. Fig. 251.

Wings moderate. Tracheal artery of the male generally expanded near the bifurcation into capsules of different forms: caecum long.

**FAMILY I. BRACHYPTERES.**

**GENERA AND SUB-GENERA.**

1. **Colymbus**, *Lin.*

Beak smooth, straight, compressed, pointed; nostrils linear.

a. **Podiceps**, *Lath.* **Colymbus**, *Briss.* and *Illiger.*

Toes enlarged (like those of the *Fulicae*) instead of true webs, those in front united, at the base only, by membranes. Fig. 227, *bis.*

b. **Colymp. proper, Lath.**

**Mergus, Briss. Eudytes, Illig. Divers.**

Feet of *Palmipes* in general, that is, the front toes united (to the ends) by membranes and terminated by pointed nails.

c. **Uria, Briss. and Illig. Gütlemots.**

Beak with feathers to the nostrils, and notched at the point, which is a little arched. Fig. 230.

No great toe. Wings still shorter than in the *Colymbus. In steep rocks.*

d. **Cephus. Greenland-pigeons.**

Beak shorter, with its back more arched, without notch; symphysis of the lower mandible extremely short. Fig. 228.

Membranes of the toes rather deeply notched. Wings stronger.
2. *Alca*, Lin.

Beak much compressed, elevated vertically, the back sharp, generally furrowed transversely.

Feet entirely palmated; no great toe. Northern seas.

*a.* Fratercula, Briss.

MORMON. Illig. Auks.

Beak, shorter than the head, as deep and deeper at the base than long.

Nostrils (narrow clefts) near the edge. Small wings, supporting them for a moment. Live on the sea, nest in rocks.

Fig. 231.

*b.* Alca, Cuv. Penguins.

Beak more elongated, like the blade of a knife.

Feathers as far as the nostrils. Wings too small to sustain them, therefore do not fly at all.

Fig. 233.


Feet, more backward than in any other birds, only afford support by resting on the tarsus, which is enlarged like the sole of the foot of a quadruped; its interior presenting three bones, soldered together at the extremities. Fig. 229.

*a.* Aptenodytes, Cuv. PATAGONIAN PINGUINS.

Beak slim, long, pointed; the superior mandible a little arched towards the end. Fig. 236.

Feathers covering one third the length of the beak or to the nostrils. Furrow from the nostrils to the end of the beak.

*b.* Catarrhactes, Briss.

Beak strong, little compressed, pointed, the back rounded, the point a little arched. Fig. 232.

Furrow from the nostril terminating obliquely at the edge of the beak.
c. Spheniscus, Briss.

Beak compressed, straight, irregularly furrowed at the base, the end of the upper mandible crook'd, that of the inferior truncated. Fig. 234.

Famili II. Longipennes.

Genera and Sub-Genera.

1. Procellaria, Lin.

Beak crook'd at the end, the extremity having the appearance of a piece articulated to the rest.


Inferior mandible truncated. Fig. 240.


End of the inferior mandible curves downwards with that of the upper; beak more elongated. Fig. 235.


Ditto.


Beak enlarged at the base, the edges furnished with plates like the Anas. Fig. 259, bis.

(1) They remain a longer time at sea than any of the other Palmipedes, and are often obliged, when a storm approaches, to fly to vessels for refuge: they make their nests in the holes of rocks and shoot an oily juice, of which their stomach appears to be always full, at those who attack them.
2. **Diomedeæ, Lin. Albatrosses.**

Beak large, strong, sharp, with distinct sutures, and terminated by a crook seemingly articulated. Fig. 257.

Nostrils, like rolls, short, on the sides of the beak. No great toe or nail in place of it. The most massive of all the *Palmipedes.* Austral seas.

3. **Larus, Lin.**

Beak compressed, elongated, pointed; the superior mandible arched towards the end; the inferior forming a projecting angle underneath.

Nostrils, towards the middle, long, narrow, open.

**Great toe short.** (1)

4. **Sterna, Lin. Swallows.**

Beak pointed, compressed, straight, without curve or projection; nostrils towards the base, oblong and pierced interruptedly. Fig. 238.

Wings extremely long and pointed. Membranes, uniting the toes, much notch-ed; feet small.

a. **Gæolandæ. Gulls.**

Larger than *Ducks.* Fig. 237.

b. **Mauves. Sea-Mews.**

Less than *Ducks.*

c. **Stercoraires, Briss. Labbes, Buff. Lestris, Illig.**

Nostrils membranous, and the orifices nearer the point and edge of the beak. Fig. 242.

Tail pointed. (2)

(1) They feed on all kinds of fish, the flesh of dead bodies, etc.: when they fly inland it is a sign of bad weather.

(2) They pursue the small *Sea Mews* with inveteracy, to deprive them of their food, and, as some say, to devour their dung.
Palmipedes.

a. Noddies.
A slight projection under the beak.
Tail, not forked, almost as long as the wings.

b. Terns.
Tail forked.

The inferior mandible of the beak much longer than the other, and both flattened in simple plates. Fig. 243. R. Niagra.

Wings long; tail forked.

Feet small. Subsist on what they snatch from the surface of the water with their lower mandible during their flight.

FAMILY III. TOTIPALMES.

GENERA AND SUB-GENERA.

1. Pelecanus, Lin.
Skin of the throat more or less dilatable.
Tongue very small.

a. Onocrotalus, Briss.
Beak extremely long, straight, broad, and flattened horizontally, terminated by a crook. Fig. 246.

The inferior mandible sustaining a naked membrane, dilatable into a large bag; 2 furrows, the length of the beak, hiding the nostrils.

b. Phalacrocorax, Briss.
Beak elongated, compressed, the end of the upper mandible crook'd, that of the lower truncated. Fig. 245.

Tongue very small, skin of the throat less dilatable, the nostrils like a fine line imperceptibly pierced.

Corvorants. Nail of the second toe notched like a saw.

a. Noddies.

A slight projection under the beak.

b. Terns.
c. Frigate-birds. Men of War Birds.

Both mandibles curved at the end. Fig. 244. Tail forked, the feet short, membranes deeply notched. (1)


Beak straight, slightly compressed, pointed, the point a little arched (fig. 1), the edges den- tated within like a saw. Nostrils prolonged in a line nearly to the point; the throat and the circles of the eyes naked, the former little dilatable. Nail of the middle toe notched like a saw; wings less than in the Frigate Birds. Tail somewhat wedge-shaped.


Beak straight, slim, pointed, the edges den- tated; head small. Fig. 249. Neck long. Feet like the Cor- vorants.


Beak straight, pointed, dentated, moderately strong. Fig. 241. Two narrow and very long feathers, like straws, in the tail. Torrid Zone.

FAMILY IV. LAMELLIROSTRES.

GENERA AND SUB-GENERA.

1. Anas, Lin.

a. Cygnus Meyer.

Beak as broad before as behind, deeper than broad at its base; neck very long. Fig. 251. Nostrils nearly in the middle of the length of the beak.

b. Anser, Briss. Geese.

Beak moderate or short, narrower before than behind, deeper than broad at its base. (1) Their powerful wings enable them to fly immense distances from land, principally between the tropics: they dart on the Flying-Fish and strike the Boobies to make them disgorge their prey.


**Palmipedes.**

**A.** _Anster proper._

Beak as long as the head; the ends of the plates at the edges having the appearance of pointed teeth.

**B.** _Barnacles. Clarke._

Brand-geese.

Beak shorter, slighter; the ends of the plates not visible at the edges. (1)

**C.** _Anas proper._ Ducks.

Beak not so deep as broad at its base, and as broad (or broader) at the extremity as towards the head.

§ Great toe bordered by a membrane.

**A.** _Macreuses. Scoters._

Beak broad and swelled. Fig. 248.

**B.** _Garrots._

Beak shorter and narrower before. Fig. 250.

**C.** _Eiders._

Beak narrower before, but longer than in the Garrots and ascending higher on the forehead, forming an angle with the feathers. Fig. 256.

§ Great toe not bordered.

**A.** _Shovelers._

Upper mandible bent into a demi-cylinder, enlarged at the end; the plates so long and thin as to resemble hairs. Fig. 254.

(1) The _A. Erythrops, Gm._, celebrated by the fable of its growing on the trees like a fruit (See Grey's notes on _Hudibras_), visits us in winter.
5. **Tadornes.**

Beak much flattened towards the end, raised in a projecting swell at the base. Fig. 255.

d. **Mergus, Lin. Mer- gansers. Harles.**

Beak more slim, more cylindrical, each mandible armed along its edges with little pointed teeth (like those of a saw) directed backwards. Fig. 258. *M. serrator.*

The end of the upper mandible crook'd.

The enlargement of the inferior larynx enormous and partly membranous, *in the males.*

Live on ponds and lakes.

The 4 additional species of *Accipitres,* figured to fill up the last plate, are, *Cathartes vulturinus,* Tem., from New California, Fig. 260; *Vultur monachus,* Lath., or *Chincou,* from India, Fig. 261; *Strix leucotis,* Tem., from Senegal, Fig. 262; *S. ascalaphus,* Savig., from Egypt, Fig. 263.

Those who possess the "Analysis of the Natural Classifications of Mammalia," will insert the following new Sub-Genus of Bats, immediately after that of *Phyllostoma,* p. 29.

6. **Glossophaga, Geoff.**

**Incisives** 4  Canines 2  **Grinders** 6

The nasal crest (a single Tongue channelled and vertical leaf) at the end extensible.

of the muzzle.

Sp. *Vesp. soricina,* Pall. *G. amplexicanda.* *G. caudifer* (figured in the Table to face p. 12). *G. ecaudata.* The three latter were found in the neighbourhood of *Rio Janeiro,* by M. de Lalande..........The skull, brought by the same traveller, is that of "a Makoca, a people beyond the Caffres:" in order to preserve the facial angle precisely, it was drawn by the *Camera lucida.*

**FINIS.**
<table>
<thead>
<tr>
<th>Authors Cited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azzara..... Azzara..... Voyages dans l’Amérique Méridionale de 1781 jusqu’en 1801. Paris 1809, t. 3. 4.</td>
</tr>
<tr>
<td>Bonel..... Bonelli..... Catalogue des Oiseaux du Piémont, 4°. 1811.</td>
</tr>
<tr>
<td>Bonnat... Bonnot.terre. Encyclopédie Méthodique.</td>
</tr>
<tr>
<td>Edwards..... Natural History of Rare Birds. 4 vol. 4°.</td>
</tr>
<tr>
<td>Forster..... Forster..... Zoologie indicæ varioris spicilegium. in-4°. Londoni, 1790.</td>
</tr>
<tr>
<td>Illiger..... Illiger..... Prodromus systematis Mammalium et Avium. 8°. Berlin, 1811.</td>
</tr>
<tr>
<td>Kle..... Klein..... Historiae avium prodromus. Dantzich, 1750.</td>
</tr>
<tr>
<td>Lape..... Lape. Stemmata avium. Dantzich, 1759.</td>
</tr>
<tr>
<td>Linnaeus..... Systema Naturæ, 1757-1766.</td>
</tr>
<tr>
<td>Mer..... Merrem..... Avium rariorum et minus cognitarum icones et descr. 4°. Leipz. 1786.</td>
</tr>
</tbody>
</table>


Voyage dans plusieurs provinces de l'Empire de Russie. 8 vol. in-8° et un atlas. Paris.


Pen: Pennant: Do. do. 8°. 4 vol.

Arctic do. 4°. 2 vol.

Indian do. 4°. 1 vol.


Sh: Shaw: General Zoology. do. 480.


Voyage aux Indes Orientales et à la Chine. 2 vol. 4°. Paris, 1782.


### INDEX TO THE ORNITHOLOGY.

<table>
<thead>
<tr>
<th>Page.</th>
<th>Accipitres.</th>
<th>12</th>
<th>Bethylus.</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agamis.</td>
<td>14</td>
<td>Bithoreau.</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Aigle Antour.</td>
<td>15</td>
<td>Bitterns.</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Alauda.</td>
<td>17</td>
<td>Blackbirds.</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Albatross.</td>
<td>17</td>
<td>Boat-bills.</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Alca.</td>
<td>17</td>
<td>Bombycivora.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Alcedo.</td>
<td>17</td>
<td>Boobies.</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Alectors.</td>
<td>17</td>
<td>Bouvreuils.</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Ampelis.</td>
<td>17</td>
<td>Brachypteres.</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Anas.</td>
<td>17</td>
<td>Brevipennes.</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Anato.</td>
<td>17</td>
<td>Bubo.</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Anhinga.</td>
<td>17</td>
<td>Bucco.</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Anis.</td>
<td>17</td>
<td>Buceros.</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Anser.</td>
<td>17</td>
<td>Bulfinsches.</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Apus.</td>
<td>17</td>
<td>Buntings.</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Aquila.</td>
<td>17</td>
<td>Buphaga.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>As.</td>
<td>17</td>
<td>Bustards.</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Aurea.</td>
<td>17</td>
<td>Buteo.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Ardea.</td>
<td>17</td>
<td>Calidris.</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Aracari.</td>
<td>17</td>
<td>Calceas.</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Arenaria.</td>
<td>17</td>
<td>Canchroama.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Astur.</td>
<td>17</td>
<td>Caprimulgus.</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Aus.</td>
<td>17</td>
<td>Caracara.</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Attagen.</td>
<td>17</td>
<td>Carbo.</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Autors.</td>
<td>17</td>
<td>Carduelis.</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Avosets.</td>
<td>17</td>
<td>Cariama.</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Balbusards.</td>
<td>17</td>
<td>Caryocactates.</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Bald-heads.</td>
<td>17</td>
<td>Casoars.</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Banana-eaters</td>
<td>17</td>
<td>Casowaries.</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Barbacous.</td>
<td>17</td>
<td>Cassicans.</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Barbets.</td>
<td>17</td>
<td>Casisius.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Barbicans.</td>
<td>17</td>
<td>Casuarius.</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Barita.</td>
<td>17</td>
<td>Catarrhactes.</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Barnacles.</td>
<td>17</td>
<td>Caterpillar-catchers.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Becardes.</td>
<td>17</td>
<td>Cathartes.</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Bee-eaters.</td>
<td>17</td>
<td>Ceblepurus.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Beef-eaters</td>
<td>17</td>
<td>Centropus.</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cephas.</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cephalopterus.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Certhia.</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ceyx.</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chaffinches.</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Charadrius.</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chardonerets.</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chatterers.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Choucaris.</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ciconia.</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cinclus.</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cinnirius.</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Circus.</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clakis.</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Climbers.</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cockatoos.</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cocks.</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coccothraustes.</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Colaris.</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Colibris.</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Colies.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Colins.</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Colius.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Columba.</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Columbaries.</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Columbi Gallines.</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Colymbus.</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Combatants.</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conirostres.</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coots.</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coracias.</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Corvoraonts.</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Corvus.</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cotinga.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coturnix.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coualix.</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Corythus.</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cotinga.</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coualix.</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cows.</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coucal.</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Courols.</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cranes.</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Numidian.</td>
<td>68</td>
</tr>
</tbody>
</table>
**INDEX TO THE ORNITHOLOGY.**

<table>
<thead>
<tr>
<th>Page</th>
<th>Page</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crax</td>
<td>....</td>
<td>Falcon</td>
</tr>
<tr>
<td>Creepers</td>
<td>....</td>
<td>Ficedula</td>
</tr>
<tr>
<td>Crescent-beaks</td>
<td>....</td>
<td>Fissirostris</td>
</tr>
<tr>
<td>Crex</td>
<td>....</td>
<td>....</td>
</tr>
<tr>
<td>Cross-bills</td>
<td>44</td>
<td>Flamingos</td>
</tr>
<tr>
<td>Crotrophos</td>
<td>54</td>
<td>Fly-birds</td>
</tr>
<tr>
<td>Cryptonyx</td>
<td>61</td>
<td>....</td>
</tr>
<tr>
<td>Crypturus</td>
<td>62</td>
<td>....</td>
</tr>
<tr>
<td>Cuckoos</td>
<td>52</td>
<td>....</td>
</tr>
<tr>
<td>——— Proper</td>
<td>52</td>
<td>Fregilus</td>
</tr>
<tr>
<td>——— Proper</td>
<td>52</td>
<td>Frigate-bird</td>
</tr>
<tr>
<td>Cuculus</td>
<td>52</td>
<td>Fringilla</td>
</tr>
<tr>
<td>Curassows</td>
<td>59</td>
<td>Fructicola</td>
</tr>
<tr>
<td>Curruca</td>
<td>40</td>
<td>Gallinula</td>
</tr>
<tr>
<td>Cursorius</td>
<td>67</td>
<td>Gallus</td>
</tr>
<tr>
<td>Curucius</td>
<td>54</td>
<td>Ganga</td>
</tr>
<tr>
<td>Curwillets</td>
<td>72</td>
<td>Cypselus</td>
</tr>
<tr>
<td>Cut-waters</td>
<td>71</td>
<td>Garrulus</td>
</tr>
<tr>
<td>——— Proper</td>
<td>71</td>
<td>Geese</td>
</tr>
<tr>
<td>——— Proper</td>
<td>71</td>
<td>....</td>
</tr>
<tr>
<td>——— Proper</td>
<td>71</td>
<td>....</td>
</tr>
<tr>
<td>——— Proper</td>
<td>71</td>
<td>....</td>
</tr>
<tr>
<td>——— Proper</td>
<td>71</td>
<td>....</td>
</tr>
<tr>
<td>——— Proper</td>
<td>71</td>
<td>....</td>
</tr>
<tr>
<td>Dacnis</td>
<td>46</td>
<td>Dacnis</td>
</tr>
<tr>
<td>Daidalion</td>
<td>21</td>
<td>Dacnis</td>
</tr>
<tr>
<td>Darters</td>
<td>81</td>
<td>Dacnis</td>
</tr>
<tr>
<td>Dentirostres</td>
<td>33</td>
<td>Dentirostres</td>
</tr>
<tr>
<td>Dicemum</td>
<td>48</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Dicolephus</td>
<td>68</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Diurnae</td>
<td>13</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Dives</td>
<td>16</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Dodo</td>
<td>66</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Doves</td>
<td>63</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Drongo</td>
<td>38</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Ducks</td>
<td>82</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Dysporus</td>
<td>81</td>
<td>——— Proper</td>
</tr>
<tr>
<td>Eagles</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Proper</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
<tr>
<td>——— Short-winged</td>
<td>24</td>
<td>——— Proper</td>
</tr>
</tbody>
</table>

**Page Numbers**

- Crax: 59
- Creepers: 48
- Crescent-beaks: 71
- Crex: 73
- Cross-bills: 44
- Crotrophos: 54
- Cryptonyx: 61
- Crypturus: 62
- Cuckoos: 52
- Curassows: 59
- Curlews: 71
- Curruca: 40
- Cursorius: 67
- Curucius: 54
- Curwillets: 72
- Cut-waters: 80
- Cygnus: 81
- Cymindis: 41
- Dacnis: 46
- Daidalion: 21
- Darters: 81
- Dentirostres: 33
- Dicemum: 48
- Dicolephus: 68
- Diurnae: 13
- Dives: 16
- Dodo: 66
- Doves: 63
- Drongo: 38
- Ducks: 82
- Dysporus: 81
- Eagles: 24
- Echassiers: 13
- Edolius: 39
- Egrets: 69
- Elders: 82
- Elanus: 26
- Emberiza: 43
- Epimachus: 48
- Eduytes: 76
- Eulabes: 47
- Falcinelles: 71
- Falco: 14
- Falcinales: 71
- Harpyia: 24
- Hawks (fishing): 24
- Hemipodius: 62
- Herons: 69
- ——— Night: 69
- Hians: 70
- Hiero-falco: 19
- Himantopus: 72
- Hirundo: 41
- Hoazin: 60
- Hoccos: 59
- Hoërotaria: 49
- Hoopoes: 48
- Hornbills: 50
- ——— Psittaceous: 53
- Ibis: 70
- Icterus: 45
- Ignobilis: 49
- Indicators: 53
- Jabiru: 69
- Jacamar: 54
- Jacana: 73
- Jacoos: 59
- Jays: 46
- Kamichi: 73
- Kingfishers: 50
- Kite: 21
- Knots: 71
- Labbes: 79
- Lagopus: 61
- Lamellirostres: 76
- Langrayen: 34
- Lanius: 14
- ——— Proper: 34
- Lapwings: 67
- Larks: 42
- ——— Sea: 71
- Lavandieres: 41
- Lestris: 79
- Limosa: 71
- Linaria: 44
- Linnets: 44
- Lobipes: 72
- Longipennes: 78
- Longirostres: 65
- Lophophores: 64
- Loxia: 44
- Lyre-tails: 39
- Machetes: 72
INDEX TO THE ORNITHOLOGY.

<table>
<thead>
<tr>
<th>Species</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macreuses</td>
<td>82</td>
</tr>
<tr>
<td>Macrodactyla</td>
<td>65</td>
</tr>
<tr>
<td>—</td>
<td>73</td>
</tr>
<tr>
<td>Macrotarsus</td>
<td>72</td>
</tr>
<tr>
<td>Manuura</td>
<td>39</td>
</tr>
<tr>
<td>Malcohas</td>
<td>53</td>
</tr>
<tr>
<td>Manakins</td>
<td>40</td>
</tr>
<tr>
<td>Martins</td>
<td>41</td>
</tr>
<tr>
<td>Mayaves</td>
<td>79</td>
</tr>
<tr>
<td>Melaeagris</td>
<td>59</td>
</tr>
<tr>
<td>Men of war birds</td>
<td>81</td>
</tr>
<tr>
<td>Mergans</td>
<td>83</td>
</tr>
<tr>
<td>Mergus</td>
<td>76</td>
</tr>
<tr>
<td>Merops</td>
<td>49</td>
</tr>
<tr>
<td>Microdactylus</td>
<td>68</td>
</tr>
<tr>
<td>Millounis</td>
<td>82</td>
</tr>
<tr>
<td>Milvus</td>
<td>24</td>
</tr>
<tr>
<td>—</td>
<td>26</td>
</tr>
<tr>
<td>— — Proper</td>
<td>26</td>
</tr>
<tr>
<td>Mitoux</td>
<td>59</td>
</tr>
<tr>
<td>Mormon</td>
<td>77</td>
</tr>
<tr>
<td>Morphus</td>
<td>24</td>
</tr>
<tr>
<td>—</td>
<td>25</td>
</tr>
<tr>
<td>Motacilla</td>
<td>40</td>
</tr>
<tr>
<td>—</td>
<td>41</td>
</tr>
<tr>
<td>Moustaches</td>
<td>43</td>
</tr>
<tr>
<td>Musiciapa</td>
<td>36</td>
</tr>
<tr>
<td>—</td>
<td>37</td>
</tr>
<tr>
<td>—</td>
<td>37</td>
</tr>
<tr>
<td>Mucipata</td>
<td>57</td>
</tr>
<tr>
<td>Musophaga</td>
<td>69</td>
</tr>
<tr>
<td>Mycteridia</td>
<td>39</td>
</tr>
<tr>
<td>Myothera</td>
<td>36</td>
</tr>
<tr>
<td>Naked-necks</td>
<td>38</td>
</tr>
<tr>
<td>Napauls</td>
<td>60</td>
</tr>
<tr>
<td>Nectarinia</td>
<td>48</td>
</tr>
<tr>
<td>Neophron</td>
<td>18</td>
</tr>
<tr>
<td>Nightingales</td>
<td>40</td>
</tr>
<tr>
<td>Nisus</td>
<td>26</td>
</tr>
<tr>
<td>Nobiles</td>
<td>19</td>
</tr>
<tr>
<td>Noctua</td>
<td>27</td>
</tr>
<tr>
<td>—</td>
<td>29</td>
</tr>
<tr>
<td>Nocturnæ</td>
<td>15</td>
</tr>
<tr>
<td>—</td>
<td>27</td>
</tr>
<tr>
<td>Noddies</td>
<td>80</td>
</tr>
<tr>
<td>Nudipes</td>
<td>29</td>
</tr>
<tr>
<td>Numenius</td>
<td>70</td>
</tr>
<tr>
<td>Numida</td>
<td>61</td>
</tr>
<tr>
<td>Numidicæ</td>
<td>68</td>
</tr>
<tr>
<td>Nutrackers</td>
<td>47</td>
</tr>
<tr>
<td>Nuthatches</td>
<td>46</td>
</tr>
<tr>
<td>Nyctea</td>
<td>29</td>
</tr>
<tr>
<td>Ocypterus</td>
<td>34</td>
</tr>
<tr>
<td>Oedicnemus</td>
<td>67</td>
</tr>
<tr>
<td>Onocrotalus</td>
<td>80</td>
</tr>
<tr>
<td>Open-beaks</td>
<td>70</td>
</tr>
<tr>
<td>Opisthrocomus</td>
<td>60</td>
</tr>
<tr>
<td>Orioniæ</td>
<td>38</td>
</tr>
<tr>
<td>Orthalida</td>
<td>60</td>
</tr>
<tr>
<td>Orthorynchus</td>
<td>49</td>
</tr>
<tr>
<td>Ortyris</td>
<td>62</td>
</tr>
<tr>
<td>Ostriches</td>
<td>65</td>
</tr>
<tr>
<td>Otis</td>
<td>66</td>
</tr>
<tr>
<td>Otus</td>
<td>28</td>
</tr>
<tr>
<td>Ourax</td>
<td>59</td>
</tr>
<tr>
<td>Oyster-catchers</td>
<td>67</td>
</tr>
<tr>
<td>Pachyptila</td>
<td>78</td>
</tr>
<tr>
<td>Palaedea</td>
<td>73</td>
</tr>
<tr>
<td>Palamedea</td>
<td>73</td>
</tr>
<tr>
<td>Palmpedes</td>
<td>13</td>
</tr>
<tr>
<td>Pandion</td>
<td>25</td>
</tr>
<tr>
<td>Paradise (birds of)</td>
<td>47</td>
</tr>
<tr>
<td>Paradisaea</td>
<td>47</td>
</tr>
<tr>
<td>Parra</td>
<td>73</td>
</tr>
<tr>
<td>Parrakas</td>
<td>60</td>
</tr>
<tr>
<td>Parrakeet</td>
<td>55</td>
</tr>
<tr>
<td>— — Aras</td>
<td>55</td>
</tr>
<tr>
<td>— — Proper</td>
<td>55</td>
</tr>
<tr>
<td>— — with trunks</td>
<td>56</td>
</tr>
<tr>
<td>Parrot</td>
<td>55</td>
</tr>
<tr>
<td>Partridge</td>
<td>61</td>
</tr>
<tr>
<td>— — Sea</td>
<td>65</td>
</tr>
<tr>
<td>Parus</td>
<td>43</td>
</tr>
<tr>
<td>— — Passeres</td>
<td>12</td>
</tr>
<tr>
<td>Pauxi</td>
<td>59</td>
</tr>
<tr>
<td>Pavo</td>
<td>58</td>
</tr>
<tr>
<td>Peacocks</td>
<td>58</td>
</tr>
<tr>
<td>— — Proper</td>
<td>58</td>
</tr>
<tr>
<td>Pelecanoides</td>
<td>78</td>
</tr>
<tr>
<td>Pelecanus</td>
<td>80</td>
</tr>
<tr>
<td>Pelican</td>
<td>80</td>
</tr>
<tr>
<td>Pelidna</td>
<td>71</td>
</tr>
<tr>
<td>Penelope</td>
<td>59</td>
</tr>
<tr>
<td>Penguins</td>
<td>77</td>
</tr>
<tr>
<td>— — Patagonian</td>
<td>77</td>
</tr>
<tr>
<td>Percnopterus</td>
<td>18</td>
</tr>
<tr>
<td>Perdix</td>
<td>61</td>
</tr>
<tr>
<td>— — Proper</td>
<td>61</td>
</tr>
<tr>
<td>Pernis</td>
<td>21</td>
</tr>
<tr>
<td>Petrels</td>
<td>18</td>
</tr>
<tr>
<td>Pezoporus</td>
<td>56</td>
</tr>
<tr>
<td>— — Ingambes</td>
<td>56</td>
</tr>
<tr>
<td>Phoœpus</td>
<td>71</td>
</tr>
<tr>
<td>Phaëton</td>
<td>81</td>
</tr>
<tr>
<td>Phalaropus</td>
<td>72</td>
</tr>
<tr>
<td>Phalacrocorax</td>
<td>80</td>
</tr>
<tr>
<td>Phasianus</td>
<td>60</td>
</tr>
<tr>
<td>— — Proper</td>
<td>60</td>
</tr>
<tr>
<td>Pheasant</td>
<td>60</td>
</tr>
<tr>
<td>— — Crested</td>
<td>60</td>
</tr>
<tr>
<td>Piauhau</td>
<td>37</td>
</tr>
<tr>
<td>Pica</td>
<td>46</td>
</tr>
<tr>
<td>Picôïdes</td>
<td>52</td>
</tr>
<tr>
<td>Picuculeas</td>
<td>48</td>
</tr>
<tr>
<td>Picus</td>
<td>52</td>
</tr>
<tr>
<td>— — Proper</td>
<td>52</td>
</tr>
<tr>
<td>Pigeons</td>
<td>62</td>
</tr>
<tr>
<td>— — Greenland</td>
<td>76</td>
</tr>
<tr>
<td>Pintado</td>
<td>61</td>
</tr>
<tr>
<td>Pipra</td>
<td>40</td>
</tr>
<tr>
<td>Pitpits</td>
<td>46</td>
</tr>
<tr>
<td>Pitylus</td>
<td>44</td>
</tr>
<tr>
<td>Platalea</td>
<td>70</td>
</tr>
<tr>
<td>Placeus</td>
<td>43</td>
</tr>
<tr>
<td>Plotus</td>
<td>81</td>
</tr>
<tr>
<td>Plovers</td>
<td>66</td>
</tr>
<tr>
<td>— — Long-legged</td>
<td>73</td>
</tr>
<tr>
<td>Plumataceae</td>
<td>34</td>
</tr>
<tr>
<td>Podarge</td>
<td>42</td>
</tr>
<tr>
<td>Podiceps</td>
<td>76</td>
</tr>
<tr>
<td>Pogonias</td>
<td>54</td>
</tr>
<tr>
<td>Polycrémentum</td>
<td>59</td>
</tr>
<tr>
<td>Porphyrio</td>
<td>74</td>
</tr>
<tr>
<td>Pratincoles</td>
<td>65</td>
</tr>
<tr>
<td>Pressirostræs</td>
<td>64</td>
</tr>
<tr>
<td>— — Proper</td>
<td>66</td>
</tr>
<tr>
<td>Prionites</td>
<td>50</td>
</tr>
<tr>
<td>Prions</td>
<td>78</td>
</tr>
<tr>
<td>Procellaria</td>
<td>78</td>
</tr>
<tr>
<td>— — Proper</td>
<td>78</td>
</tr>
<tr>
<td>Procynias</td>
<td>38</td>
</tr>
<tr>
<td>Promerops</td>
<td>48</td>
</tr>
<tr>
<td>Psaris</td>
<td>35</td>
</tr>
<tr>
<td>Psittacus</td>
<td>55</td>
</tr>
<tr>
<td>Psophia</td>
<td>68</td>
</tr>
<tr>
<td>Pterocles</td>
<td>61</td>
</tr>
<tr>
<td>Pteroglossus</td>
<td>55</td>
</tr>
<tr>
<td>Puffins</td>
<td>78</td>
</tr>
<tr>
<td>Puffinus</td>
<td>78</td>
</tr>
<tr>
<td>Purres</td>
<td>74</td>
</tr>
<tr>
<td>Pyrgita</td>
<td>43</td>
</tr>
<tr>
<td>Pyrrho-Corax</td>
<td>38</td>
</tr>
<tr>
<td>Pyrrhula</td>
<td>44</td>
</tr>
<tr>
<td>Quails</td>
<td>62</td>
</tr>
<tr>
<td>— — American</td>
<td>62</td>
</tr>
<tr>
<td>Quans</td>
<td>59</td>
</tr>
<tr>
<td>Rails</td>
<td>73</td>
</tr>
<tr>
<td>Railius</td>
<td>75</td>
</tr>
<tr>
<td>Rhamboustos</td>
<td>54</td>
</tr>
<tr>
<td>— — Proper</td>
<td>55</td>
</tr>
<tr>
<td>Recurvirostra</td>
<td>72</td>
</tr>
<tr>
<td>Regulus</td>
<td>40</td>
</tr>
<tr>
<td>Remiz</td>
<td>43</td>
</tr>
<tr>
<td>Rhea</td>
<td>66</td>
</tr>
<tr>
<td>Rhynchops</td>
<td>80</td>
</tr>
<tr>
<td>Rollers</td>
<td>47</td>
</tr>
<tr>
<td>Ruffs and Reeves</td>
<td>72</td>
</tr>
<tr>
<td>Rupicola</td>
<td>40</td>
</tr>
<tr>
<td>Rynchocha</td>
<td>71</td>
</tr>
<tr>
<td>Category</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Sand-pipers</td>
<td>67</td>
</tr>
<tr>
<td>Sarcoramphus</td>
<td>18</td>
</tr>
<tr>
<td>Sasa</td>
<td>60</td>
</tr>
<tr>
<td>Satyrus</td>
<td>60</td>
</tr>
<tr>
<td>Savacous</td>
<td>68</td>
</tr>
<tr>
<td>Saxicola</td>
<td>40</td>
</tr>
<tr>
<td>Scansores</td>
<td>13</td>
</tr>
<tr>
<td>Scopolas</td>
<td>70</td>
</tr>
<tr>
<td>Scops</td>
<td>29</td>
</tr>
<tr>
<td>Scopus</td>
<td>69</td>
</tr>
<tr>
<td>Screamer</td>
<td>73</td>
</tr>
<tr>
<td>Scythrops</td>
<td>53</td>
</tr>
<tr>
<td>Sc-a-dottrels</td>
<td>72</td>
</tr>
<tr>
<td>Sea Mews</td>
<td>79</td>
</tr>
<tr>
<td>Sea Pies</td>
<td>67</td>
</tr>
<tr>
<td>Serpentarius</td>
<td>22</td>
</tr>
<tr>
<td>Shore-birds</td>
<td>64</td>
</tr>
<tr>
<td>Shovelers</td>
<td>82</td>
</tr>
<tr>
<td>Shrikes</td>
<td>34</td>
</tr>
<tr>
<td>Skimmers</td>
<td>80</td>
</tr>
<tr>
<td>Snipes</td>
<td>71</td>
</tr>
<tr>
<td>Spheniscus</td>
<td>78</td>
</tr>
<tr>
<td>Spoon-bills</td>
<td>70</td>
</tr>
<tr>
<td>Squatarola</td>
<td>67</td>
</tr>
<tr>
<td>Stares</td>
<td>46</td>
</tr>
<tr>
<td>Starlings</td>
<td>46</td>
</tr>
<tr>
<td>Stercoraires</td>
<td>79</td>
</tr>
<tr>
<td>Sternia</td>
<td>79</td>
</tr>
<tr>
<td>Stints</td>
<td>71</td>
</tr>
<tr>
<td>Storks</td>
<td>69</td>
</tr>
<tr>
<td>Straw-tails</td>
<td>81</td>
</tr>
<tr>
<td>Strepsilas</td>
<td>72</td>
</tr>
<tr>
<td>Strix</td>
<td>14</td>
</tr>
<tr>
<td>S---</td>
<td>27</td>
</tr>
<tr>
<td>Struthio</td>
<td>65</td>
</tr>
<tr>
<td>Sturnus</td>
<td>46</td>
</tr>
<tr>
<td>Sugar birds</td>
<td>49</td>
</tr>
<tr>
<td>Sugar-eaters</td>
<td>49</td>
</tr>
<tr>
<td>Sula</td>
<td>81</td>
</tr>
<tr>
<td>Sultans</td>
<td>74</td>
</tr>
<tr>
<td>Surnia</td>
<td>29</td>
</tr>
<tr>
<td>Swallows</td>
<td>41</td>
</tr>
<tr>
<td>Sylvestris</td>
<td>79</td>
</tr>
<tr>
<td>Sylvina</td>
<td>10</td>
</tr>
<tr>
<td>Syminum</td>
<td>29</td>
</tr>
<tr>
<td>Tachydromus</td>
<td>67</td>
</tr>
<tr>
<td>Tattones</td>
<td>83</td>
</tr>
<tr>
<td>Tanatias</td>
<td>54</td>
</tr>
<tr>
<td>Tanagers</td>
<td>35</td>
</tr>
<tr>
<td>Scytocerys</td>
<td>35</td>
</tr>
<tr>
<td>Scytosceros</td>
<td>36</td>
</tr>
<tr>
<td>Sea-like</td>
<td>36</td>
</tr>
<tr>
<td>Sea-like Proper</td>
<td>36</td>
</tr>
<tr>
<td>Ramphocercus</td>
<td>36</td>
</tr>
<tr>
<td>Tanaugra</td>
<td>35</td>
</tr>
<tr>
<td>Tantulus</td>
<td>70</td>
</tr>
<tr>
<td>Temia</td>
<td>47</td>
</tr>
<tr>
<td>Tenuirostres</td>
<td>34</td>
</tr>
<tr>
<td>Tenuirostres Proper</td>
<td>48</td>
</tr>
<tr>
<td>Terns</td>
<td>80</td>
</tr>
<tr>
<td>Tetras</td>
<td>61</td>
</tr>
<tr>
<td>Thrushes</td>
<td>38</td>
</tr>
<tr>
<td>Thalassus</td>
<td>39</td>
</tr>
<tr>
<td>Tholosus</td>
<td>48</td>
</tr>
<tr>
<td>Tholosus Proper</td>
<td>39</td>
</tr>
<tr>
<td>Tinamus</td>
<td>60</td>
</tr>
<tr>
<td>Tisserines</td>
<td>43</td>
</tr>
<tr>
<td>Titmice</td>
<td>43</td>
</tr>
<tr>
<td>Todius</td>
<td>50</td>
</tr>
<tr>
<td>Toctias</td>
<td>50</td>
</tr>
<tr>
<td>Torcolums</td>
<td>52</td>
</tr>
<tr>
<td>Totanuus</td>
<td>72</td>
</tr>
<tr>
<td>Totipalmes</td>
<td>75</td>
</tr>
<tr>
<td>Toucans</td>
<td>54</td>
</tr>
<tr>
<td>Touracous</td>
<td>57</td>
</tr>
<tr>
<td>Tridactylae</td>
<td>52</td>
</tr>
<tr>
<td>Tridactyles</td>
<td>62</td>
</tr>
<tr>
<td>Tringa</td>
<td>67</td>
</tr>
<tr>
<td>Tringa Proper</td>
<td>67</td>
</tr>
<tr>
<td>Troyhils</td>
<td>49</td>
</tr>
<tr>
<td>Tropic-birds</td>
<td></td>
</tr>
<tr>
<td>Trogloths</td>
<td>40</td>
</tr>
<tr>
<td>Trogon</td>
<td>54</td>
</tr>
<tr>
<td>Trumpetts</td>
<td>68</td>
</tr>
<tr>
<td>Turnix</td>
<td>62</td>
</tr>
<tr>
<td>Turnstones</td>
<td>72</td>
</tr>
<tr>
<td>Tyrannus</td>
<td>36</td>
</tr>
<tr>
<td>Vanga</td>
<td></td>
</tr>
<tr>
<td>Vidus</td>
<td>44</td>
</tr>
<tr>
<td>Virago</td>
<td>63</td>
</tr>
<tr>
<td>Vourouduirus</td>
<td>53</td>
</tr>
<tr>
<td>Vultur</td>
<td>14</td>
</tr>
<tr>
<td>Vultur Proper</td>
<td>16</td>
</tr>
<tr>
<td>Vultur Proper</td>
<td></td>
</tr>
<tr>
<td>Waders</td>
<td>64</td>
</tr>
<tr>
<td>Wag-tails</td>
<td>41</td>
</tr>
<tr>
<td>Wasp-eaters</td>
<td>50</td>
</tr>
<tr>
<td>Water-fowls</td>
<td>74</td>
</tr>
<tr>
<td>Water Ouzels</td>
<td>39</td>
</tr>
<tr>
<td>Wattlebirds</td>
<td>45</td>
</tr>
<tr>
<td>Weavers</td>
<td>43</td>
</tr>
<tr>
<td>Whimbrels</td>
<td>71</td>
</tr>
<tr>
<td>Woodcocks</td>
<td>71</td>
</tr>
<tr>
<td>Woodpeckers</td>
<td>52</td>
</tr>
<tr>
<td>Wrens</td>
<td>40</td>
</tr>
<tr>
<td>Wrynecks</td>
<td>52</td>
</tr>
<tr>
<td>Xanthornus</td>
<td>46</td>
</tr>
<tr>
<td>Ynambus</td>
<td>62</td>
</tr>
<tr>
<td>Yunx</td>
<td>62</td>
</tr>
</tbody>
</table>
PLATE I.

...inger.

...m or fibula.

...s (represented by a single bone).

... the union of the two clavicles.
PLATE II.

Fig. I.

Fig. II.

Fig. XVI.

Fig. XVII.

remiges minores.
remiges majores.
remiges or greater remiges.
remiges or lesser ditto.
remiges scapularies.

merus on which the scapularies are attached.
merus and ulna ... secondaries ...
ulna ... bastard ...
acarpus and joints ... primaries ...
Birds

Orders

2 & 2 before

1, or none: those before

Mind: toes

1. or none: those before

entirely free: beak & nails crook'd

entirely by broad membranes

united

entirely by broad membranes

all, at the base

partly

very long: the thighs partly naked

the 2 last: terse

moderate: the thighs feather'd

3 Scansores

1 Accipitres

6 Palimpedes

4 Gallinaceae

5 Grallae

2 Passeres
la conversion des alcalis minéraux combinés aux acides organiques, en carbonates alcalins. Depuis des observations intéressantes dues à M. Wöhrler, on considérait cette transformation comme un phénomène constant ; elle est, au contraire, d’une extrême variabilité. Sur 68 ingestions, 175 ont été suivies d’urines alcalines, 87 d’urines acides et 6 d’urines sensiblement neutres. On peut, en suivant certaines règles, provoquer l’expulsion complète du sel de Seignette par le tube intestinal ; le passage du sel par les urines est alors un cas infiniment rare. On peut, au contraire, le faire pénétrer dans l’économie, saturet ainsi les urines d’une dose énorme de carbonate alcalin ; l’évacuation du tartrate par les selles devient l’exception.

Si un grand nombre de médicaments se trouvent soumis à de semblables variations, il est difficile de croire qu’il en soit autrement, on comprend quel prix doit attacher la médecine à éviter ces variations ou à les faire tourner à son profit.

Après avoir décrit avec soin les méthodes d’analyse qu’ils ont mises en usage, MM. Laveran et Millon établissent qu’il est constant que le sel de Seignette ne s’échappe jamais par les urines à l’état de tartrate, et que celui qui prend cette voie est entièrement converti en carbonate.

Lorsque le sel de Seignette est pris en peu de temps et à la dose de 40 à 50 grammes, son effet tend à se concentrer sur les voies digestives. Les vomissements sont très-rares, mais l’ingestion est toujours suivie de plusieurs selles liquides. Ce n’est que d’une manière exceptionnelle que les malades n’éprouvent rien du côté du tube digestif ; mais, dans ce dernier cas, ils rendent des urines alcalines.

Prescrit à petite dose, de manière que 20, 30 ou 40 grammes ne soient pris qu’en huit ou dix heures, le tartrate double produit des effets opposés. Dans ce cas, la purgation est l’exception ; l’alcalinité des urines devient J’état habituel : un seul litre d’urine peut saturer jusqu’à 250 divisions de l’acide sulfurique normal, versé goutte à goutte, à l’aide de la burette alcalimétrique de M. Gay-Lussac. De sorte qu’en ne tenant compte que du tartrate double de soude et de potasse, on voit qu’à haute dose il est directement expulsé par le mouvement de l’intestin ; tandis que de petites quantités, bien qu’elles soient réitérées, pénètrent l’économie, sont transformées par elle, amenées au dernier terme d’oxydation.