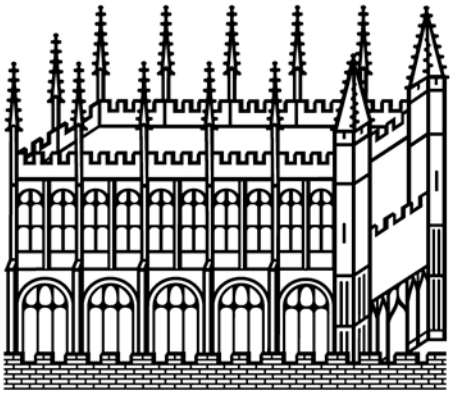

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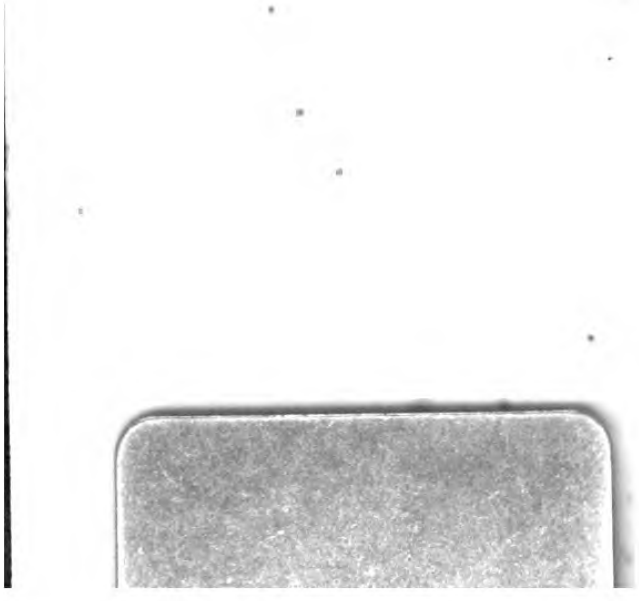

№ 1. The Cotinga.

BEAUTIFUL BIRDS:

Their Natural History;

INCLUDING AN ACCOUNT OF THEIR STRUCTURE, HABITS, NIDIFICATION ETC. ETC.

EDITED, FROM THE
MANUSCRIPT OF THE LATE JOHN COTTON, ESQ., F.Z.S.,

BY

ROBERT TYAS, B.A., F.R.B.S.,
AUTHOR OF "FLOWERS FROM FOREIGN LANDS;" "FLOWERS FROM THE HOLY LAND;" "FLOWERS AND HERALDRY;" "FAVOURITE FIELD FLOWERS," ETC. ETC.

VOL. I.

WITH TWELVE COLOURED PLATES,

DRAWN AND COLOURED BY JAMES ANDREWS,

And many Wood Engravings.

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ADVERTISEMENT.

Of the various branches of Natural History, there is perhaps none of greater interest than Ornithology. A knowledge of the structure of Birds, derived from actual dissection and comparison of different specimens, and of their habits, learnt by personal observation, is valuable, deeply interesting, and most instructive; but the number of those who can thus become acquainted with the feathered tribes is small indeed, yet there are thousands of intelligent minds anxious to know, though it be only by the report of others, the wonders of creative wisdom as displayed in this portion of animated nature. To such this volume, we trust, will be a most welcome publication, and we cannot doubt that the attractiveness of its contents will render them anxious to possess the remaining portion of the work. The whole will be completed in three volumes, of uniform size and thickness, and will comprise a complete outline of the history of Birds.

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INTRODUCTION.

THE system of the universe, according to Copernicus, and other philosophers, consists of globular forms revolving in circles around a common centre. The earth revolves around the sun, and thus a circle of seasons is caused to follow in succession upon the face of the globe; it moves also round its own axis, daily producing a continuous succession of day and night, of light and darkness. Hence it appears that we may not unsuitably adopt a circular arrangement in setting in order the different branches of natural history, and we think the adoption of this method in ornithology at least, to be a most desirable one.

Birds seem naturally to form themselves into five primary groups or orders, viz.:—I. RAPTORIAL BIRDS, or Birds of Prey; II. INSESSORIAL, or Perching Birds; III. RASORIAL, or Scraping Birds; IV. GRALLATORIAL, or, Wading Birds; and V. NATATORIAL, or Swimming Birds. Upon this quinary system, first promulged by Mr. Vigors, our arrangement is in part founded, not, however, attempting to force each tribe, family, etc., into a circular form, nor yet affirming that each division contains analogous or symbolical representatives of the five primary divisions of the class, as Mr. Swainson has so ingeniously endeavoured to show.

The principle of our classification is this: we consider that the whole class of birds forms one circle; that this may be divided naturally into five orders, or nine tribes,

which may be disposed so as to have a common centre represented in the diagram by the word AVES; that in each

order or tribe there is a typical form, which is either distinguished by negative or other characters from those around it, or exhibits in the highest degree of development the peculiar characters which distinguish it from all others of its class, and every other order. On either side of the typical form is a sub-typical group, in which a diminution or modification of the typical characters may be observed; and at the two extremities are the most aberrant forms which unite them respectively to the neighbouring orders or tribes. Each tribe is thus divided into five groups or families, except that of *Unguipedes*, or the raptorial

order, which appears to admit of a threefold division only.

The whole class of birds thus forms one continuous circle, by means of the progressive chain of affinities which connect the successive tribes and families. The various orders blend into one another nearly as imperceptibly as one season is united with another.

How far the principle adopted may accord with the general harmony and progressive development of form and function observed throughout nature it is not for us to determine; but we may remark that though the affinities of neighbouring groups may not in some instances be so obvious as to remove all doubts of their propinquity or close relationship to each other, yet, from the intimate connection subsisting between most of the adjoining families, the principle of a consecutive series of families, with a gradual and progressive chain of affinities and particular functions, so as to form a nearly perfect circle, does not seem repugnant to nature, but, on the contrary, is consonant with the general principles of creation.

We shall not stay to point out the peculiar attractiveness of ornithology, nor the comparative beauty of the feathered tribes, viewed in their relation to other animated parts of creation, but at once enter upon a general description of those parts of birds which most merit our attention.

In noticing the plumage of birds, we may observe that it may be divided into three parts: 1, the down, which is next the body, and serves to preserve an equal temperature, and to resist wet; 2, external feathers not used in flight; and, 3, feathers of flight, which include the tail-feathers.

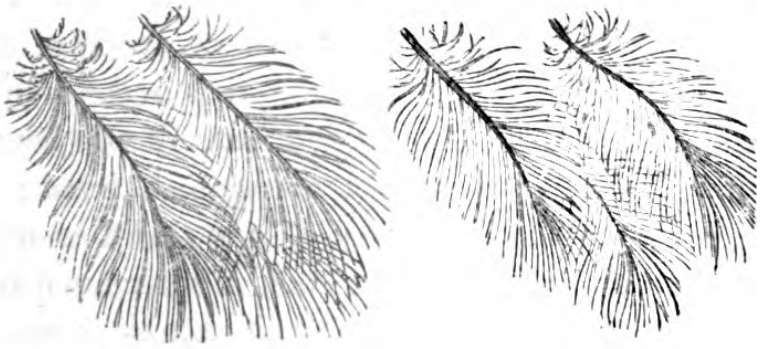
Down is not to be found in all birds; or at least, says Mr. Swainson, it is so slight in some that its presence is only indicated by soft hairs thinly scattered over the body,

as we see in domestic fowls and other poultry; in birds which have not, like the duck, a distinct layer of down, the lower part of the external feathers supplies the deficiency, so that the down is only removed to another situation, being placed at the base of the true feathers, where it equally covers and protects the skin. Down, when a separate substance, is mostly confined to bodies of aquatic birds, for additional warmth, and to render the skin more inaccessible to the watery element; this sort of feathers is most developed in the duck family, particularly in the eiders or swans. It is also conspicuous upon the breast of the heron, unmixed with any other feathers.

The chick, of ground birds at least, on leaving the egg, is covered with down, and feathers are not produced till the parent's care is no longer required to afford shelter beneath its wing; the second class of feathers may therefore be regarded as a protection to the bird from external injury, and from the force of wind and weather. These external feathers are differently constructed to the down; they are composed, to use Mr. Swainson's words, of three parts or substances: 1, down; 2, laminæ, or webs; and, 3, the shaft or quill, on the sides of which the two former are arranged. The downy laminæ or webs of these feathers are different from the body down, since they not only have a distinct shaft of their own, but the laminæ which spring from both sides of it are regularly arranged, although, being devoid of all elasticity, like true down, they do not unite and repose parallel to each other. The soft downy laminæ are always situated close to the insertion of the quill into the skin. The true laminæ lie in two series, one on each side of the shaft, and these sides are called the external and internal webs. The outward appearance of these webs is much the same as that of down, with this difference only, that the laminæ are stronger and

elastic, and seem to stick together, and form a parallel series, which the downy laminæ do not.

By the growth of new feathers, and the falling off of old, the plumage is kept uninjured, and adapted to the change of seasons. The winter plumage is rendered thicker and warmer than that of summer by the elongation of the laminæ of each feather produced at the autumnal moult, and by its being edged with a kind of fringe, usually of a different hue to the feather itself. In spring this edging falls off, and displays the natural colour of the feathers, which assume a brighter hue at the approach of the love season. The illustration shows how the feathers of the body are disposed, and their winter and summer appearance.



The colours of birds generally assimilate most with the colours prevailing in the localities they frequent, they are thus enabled the more readily to elude observation; and some appear to vary their colours as the seasons vary. Thus, to adopt the words of Mr. Mudie, "the ptarmigan is lichen rock in summer, hoar frost in autumn, and snow in winter. Grouse are brown heather, black-game are peat-bank and shingle, and partridges are clods of withered stalks all the year round."

The wings are the principal organs of flight, and as such it is necessary that they should combine strength with lightness and facility of movement. These qualities they possess in an eminent degree. The wing bears more resemblance to the fore legs of a quadruped or the arm of

man than might at first be supposed possible. The anatomy is nearly the same, modified so as to render it fit for flight. There is the *scapula*, or blade-bone in quadrupeds, generally small and slender, attached to the head of the *humerus*, which is the largest and most powerful bone of the wing. The *radius* and *ulna*, forming a hinge-joint at their junction with the lower extremity of the *humerus*. The *carpus*, consisting of two bones only, the one articulated with the *radius*, the other with the *ulna*. The *metacarpus*, consisting of two bones, which soon become united into one at the upper part. On the radial side this bone has a process, derived perhaps, says Dr. Roget, from a third metacarpal bone, which is anchylosed at a still earlier period of ossification; and to this process a small pointed bone is connected, corresponding to a rudimental *thumb*. There are generally two fingers, of which the first exhibits traces of having been originally two bones; the inner finger consists of two or three longer phalanges, and the outer one of a single phalanx; there is sometimes also a rudimental bone corresponding to a *little finger*. The degree of development in these bones varies in different tribes of birds.*

"The wings," Mr. Swainson says, "bear two sorts of feathers, besides a third series which lie over the base of the humerus, and cover that and the tertial quills. The first are those by which the broad part of the wing is covered, and which serve to protect and strengthen the base of the second series, or the quills, which more especially are the instruments of flight. We must consider each of them separately. The first, which of course are the smallest, are called *wing-covers*, and they are of three sorts, the *shoulder*, the *lesser*, and the *greater*. They are disposed not so much in an intricate form, as in rows, so that the outer web lies on the inner web of the next, and

* Roget's Bridgewater Treatise.

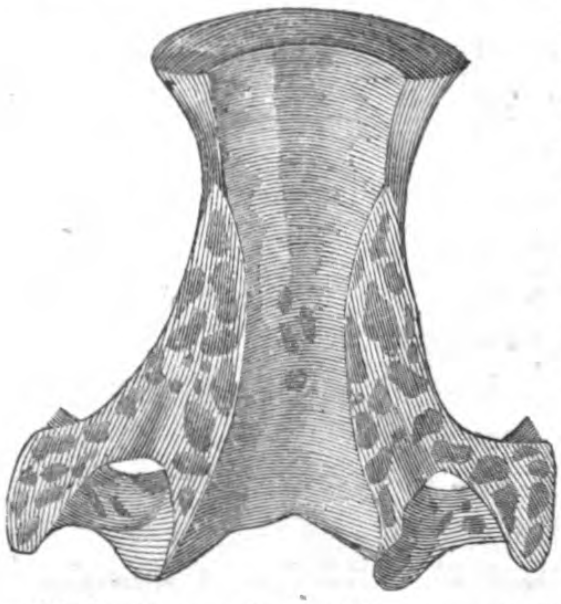
so on. Those of the shoulder are the smallest, at the edge or margin adjoining the bones of the wing they are very small, each series gradually increasing in size, and assuming more and more a parallel direction; but this disposition is not perfectly observable until we come to the *lesser covers*, which consist of a single row of feathers, larger than any of the preceding, and which are disposed in the manner just mentioned. The *greater covers* immediately follow, being, as their name denotes, larger than the last, but forming a single row (distinguished in the cut by their lighter colour). Their use is to protect and strengthen the base of the most important feathers belonging to the bird, which we shall now notice.

The quills constitute the greatest proportion of the length of the wing, the largest being generally four or five times more developed than the greater covers; their length, however, is regulated by the situation they occupy with reference to the joints of the wing. They consequently form three divisions, distinguished as the *primaries*, the *secondaries*, and the *tertials*. The primaries are the outermost; they are almost always longest, and in the swift-flying birds, like the swallow, are double the length of any of the other quills. The primaries are ten in number, and are attached to the

carpus, or those bones which represent the hand; they gradually diminish in length until they reach the secondaries, which are inserted in the *cubitus*, or first joint of the arm, and are usually only half the length of the primaries. Lastly come the tertials, which have their origin from the humerus."*

The train or tail of the bird is, in most instances, of essential service in its flight. It aids the bird in its ascent or descent, and conduces to that facility of turning to and fro in the air which is so requisite in birds that hawk on the wing, such as swallows, etc.

On examining the skeleton of a bird, we find it beautifully constructed, to suit its peculiar habits. One instance of this adaptation is seen in the provision made for free and easy motion of the head. "This is accomplished in the simplest and most effectual manner, by enlarging the diameter of the canal at the upper and lower part of each vertebra, while at the middle it remains of the usual size, so that the shape of the cavity resembles that of an hour-glass. Thus a wide space is left at the junction of each successive vertebra, allowing of very considerable flexion without reducing the diameter of the canal beyond that of the narrow portion, and therefore without producing compression of the spinal marrow. The design of this structure is further evident from its not existing in the dorsal and lumbar portions of the space, which admit of no motion what-

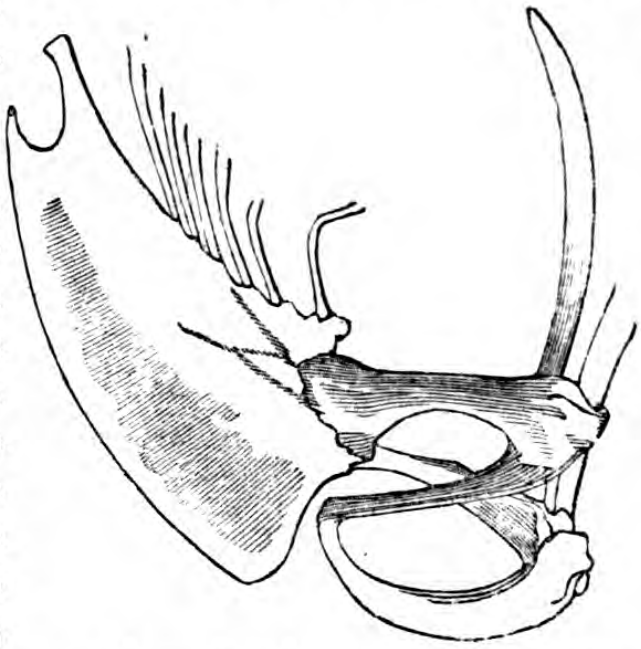


* Nat. Hist. and Classification of Birds.

ever, and where there is no variation in the diameter of the spinal canal."*

The breast-bone (*sternum*) is composed of five pieces strongly joined together, and prolonged below with a crest (*crista*) for that purpose. This crest or keel is developed more or less, according to the habits of the bird. In birds whose flight is strongest and most continuous it is the largest; while in the ostrich, and birds which run rather than fly, it is entirely absent.

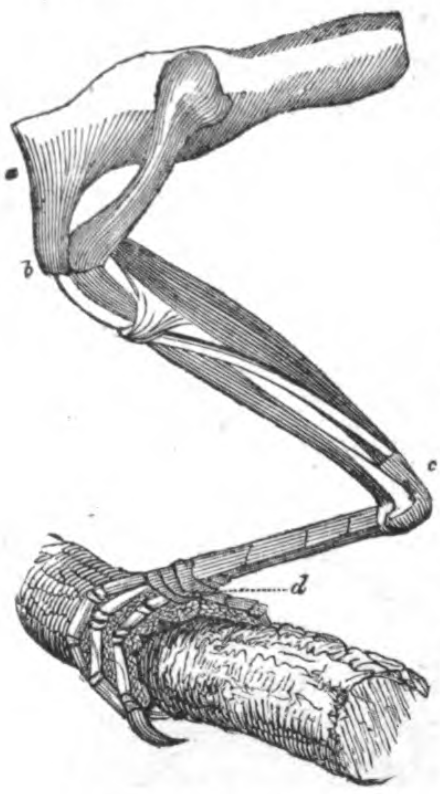
The wings and trunk are connected by means of the two clavicles, and of that fork-like elastic bone called the *merry-thought*. This apparatus operates as an antagonist power to the action which would bring the wings together in flight, did not these bones, especially the *merry-thought* (*os furcatorium*) keep the shoulders asunder. The greater or less development of this bone depends on the exigencies of each particular case. In birds whose flight is long and rapid it is strong, with the branches widely arched, and carried forwards on the body; in the ostrich, cassowary, and emu, the bone becomes a mere rudiment. The engraving represents the breast-bone of the Peregrine Falcon.



The bones of the leg are the thigh-bone (*femur*), which is short; the leg-bones (*tibia* and *fibula*), the latter is small, and becomes anchylosed to the tibia; one metatarsal

* Roget's Bridgewater Treatise.

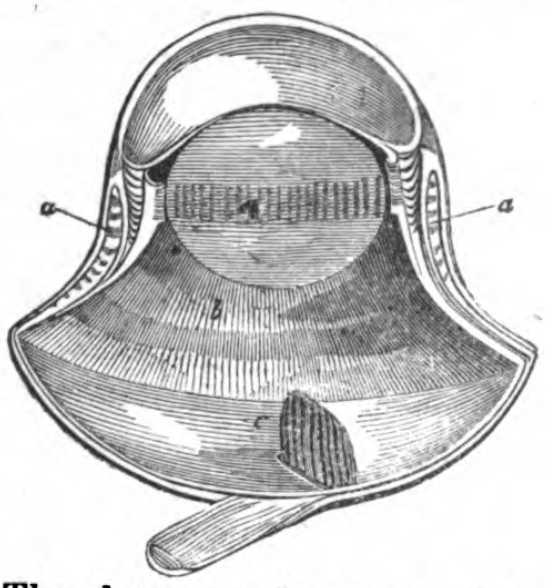
bone, and the bones of the toes, which are generally four in number, three directed forwards and one backwards; the latter sometimes wanting. The illustration shows the mechanical construction of the leg. The tendons of the muscles which bend the claws pass over the joints of the heel (*c*), and are joined there by another muscle, which passes over the knee (*b*), so that the bending of the heel is necessarily followed by a bending of the toes. When a bird therefore alights on the branch of a tree the weight of its body bends these joints, and thus puts the tendons on the stretch, which draws in the claws to lay hold of the branch, without any effort on the part of the bird, and hence it sits as secure when asleep as when awake. This will be better understood by reference to the figure :—*a* represents a muscle which arises from the haunch-bone, and becoming suddenly tendinous, passes the *outer* angle of the thigh-joint at *b*, then winding round the leg-bone, it slips over the outer angle of the leg-joint at *c*, proceeds forward to the palm of the foot at *d*, divides and is inserted into the bones of the toes. From this arrangement it is evident that when the bones of the leg and thigh are bent together by the weight of the sleeping bird, the tendon will be stretched over the angles *b* and *c*, and the bones of the foot become strongly clasped; and cannot be relaxed unless the leg is straightened.



The roosting on one foot, common to many birds, tends to increase their stability upon the perch; the whole

weight being thrown upon one instead of two supports, greater force is given to the power of the contracting tendons.

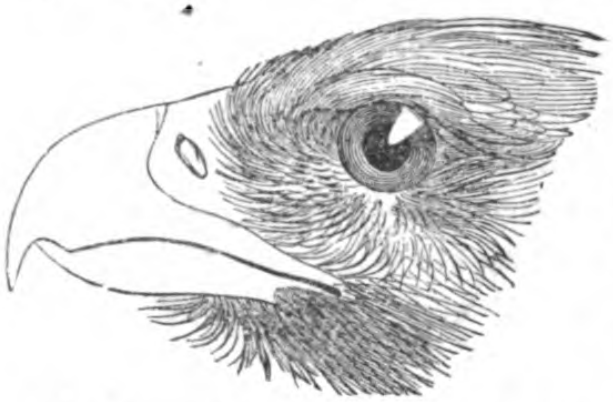
The eye of the bird is a wonderful instrument; and as it is more exposed, in many species, to the action of the weather than that of the generality of animals, we find that it is fortified and furnished in an extraordinary manner. The anterior part of the ball has a circle of bone, or quadrangular bony plates; and attached to the inner canthus there is a third eyelid, or nictitating membrane (*membrana nictitans*), which is rapidly drawn over the front of the globe, in a transverse direction to the usual opening, when required, by means of two muscles adapted to the purpose. This membrane consists of a semi-transparent substance, lying, when not in use, in the inner corner of the eye; and is thus kept constantly soft and moist. The corner of the eye is very convex, and beautifully clear, but the crystalline lens is rather flat. The circle of bony plates surrounding the ball serves to preserve the hemispherical form of the sclerotica (or body of the eye as it may be termed), and perhaps adjusts the eye to near or remote vision.



The plates vary in number from fifteen to twenty, and they lie close together, their edges successively overlapping each other. The figure represents a section of the eye of an owl (*Strix bubo*): *a a*, the bony plates in the sclerotica; *b*, ciliary body; *c*, pecten or marsupium; and *d*, optic nerve. The use of the marsupium is unknown, though it appears, says Dr. Roget, to

be of some importance, as it is found in almost every bird having extensive powers of vision.

The bill is formed of two parts, the upper and lower mandible, which open and shut chiefly by the motion of the lower one. Its substance is of greater or less density, suitable to the purposes to which it is to be applied. The highest part of the upper mandible (*maxilla*) is the *culmen*, or keel; the corresponding ridge of the lower mandible (*mandibula*) is the *gonys*; the line formed by the junction of the mandibles is called the commissure; and the upper side of the angle formed by the gape is termed the rictus. At the base of the upper mandible there is often a *cere*, or naked skin, in which the nostrils are placed. The *tomia*, or cutting margins of the mandibles, are either entire, that is, perfectly smooth, or toothed, festooned, or serrated, straight or curved. It is by this organ that birds seize their prey or gather their food; and it is modified to suit particular modes of feeding.



We have in these introductory pages described the principal parts of the bird; space will not allow of our speaking more minutely of them, nor of particularising some other interesting peculiarities of the feathered tribes. Many of these points are, however, more or less treated of in speaking of the various orders and families, and if these volumes do not satisfy the demands of the ornithologist, we trust that they contain sufficient to excite the interest of the young naturalist, and prepare him for entering upon the more elaborate productions of other writers with greater intelligence and a keener zest.

BEAUTIFUL BIRDS.

Vultures.

Raptores.

Of rapacious birds now known to exist, there are three principal divisions, namely, Vultures (*Vulturidæ*), Falcons (*Falconidæ*), and Owls, (*Strigidæ*). Many of these birds are of large size and great strength. They possess formidable weapons of destruction, which, with the bold daring displayed by some typical species, and their majestic and vigorous flight, render them objects of admiration. The Vultures, on one hand, and Owls, on the other, share aberrant characters from the true Falcons. The former are comparatively slothful and cowardly, and instead of procuring food by their own courage and exertion, as the more noble birds of prey do, they glut themselves upon carrion, like their representatives in the carnivorous quadrupeds, the skulking hyenas; the latter prowl about in the night after feeble and ignoble game.

However loathsome may be the duties confided to the Vultures, in our estimation, we cannot but perceive their wonderful adaptation to the performance of them, and acknowledge the wisdom of Him Who, in he arrangement of those laws which keep up the con-

stant equilibrium of the universe, has throughout produced the maximum of effect by the minimum amount of force and material, and that every design has been wrought out by the simplest and yet most effectual instruments.

Vultures, with some other birds and animals of the like propensities, are cleansers of the earth from putrefying animal substances. It is in climes where excessive solar heat produces rapid decomposition of animals dying in mountainous districts that Vultures abound. In plains and tropical woods, hyenas and jackals discharge the same important office. The mountainous rocks where the former find pasture are nearly inaccessible to the latter; the powerful wings and keen sight of the Vulture are needed to hunt the wide-spread range of mountain elevations, and that they may the more readily descry their putrefying food, an acute sense of smell has been given to them.* They are allured by the odour of putrefaction, as the jackal and hyena. Their powerful sight is also, doubtless, employed in conducting them to their food, for they have been known to congregate in large numbers about an animal just expired, and from which no putrid effluvia could have arisen. Le Vaillant killed a large gazelle, and concealing himself in a thicket, "in an instant a number of Ravens made their appearance, fluttering about the animal and making a great croaking. In less than half a quarter of an hour, these birds

* Although it has been questioned whether a keen sense of smell is possessed by Vultures, yet analogy would lead us to conclude, that as the odour which proceeds from the substances constituting their chief subsistence is peculiarly strong, their sense in this respect would be conformable to the nature of the food, so that they might the more quickly perceive its locality.

were reinforced by kites and buzzards, and immediately afterwards," he says, "I perceived, on raising my head, a flight of birds at a prodigious height, wheeling round and round in their descent. These I soon recognised to be Vultures, which seemed, if I may so express myself, to escape from a cavern in the sky. The first comers immediately fell upon the gazelle, but I did not allow them time to tear it in pieces. I left my concealment, and they betook themselves slowly and heavily to flight, rejoining their comrades, whose numbers continued to increase. They seemed almost to precipitate themselves from the clouds to share the spoil, but my presence caused them speedily to disappear. Thus it is, then," he continues, "that the Vultures are called upon to participate in their prey; the first carnivorous birds that discover a carcass rouse the others which may happen to be in the environs by their cries and by their motions. If the nearest Vulture does not spy his prey from the lofty region of the air in which he swims by means of his wide-spread wings, he perceives at least the subaltern and more terrestrial birds of prey preparing to take possession of it; but perhaps he has himself a sufficient power of vision to enable him to discover it. He descends hastily and with a wheeling flight, and his fall directs the other Vultures who witness his evolutions, and who, no doubt, have their instinct sharpened with regard to everything that concerns their food. A concourse of carnivorous birds speedily takes place in the neighbourhood of the carcass, sufficient to attract the Vultures of the whole district, nearly in the same manner as the disturbances of a number of men run-

ning along the streets of a crowded town attract the whole population to follow in their train."

The characters which distinguish the present family from all other rapacious birds consist (to adopt the words of Mr. Bennett) in the entire or partial denudation of the head and neck, the latter being much elongated; the lateral position of the nostrils; in a generally broad and powerful bill, curved only at the point, and clothed at its base by an extended cere; the nakedness of the tarsi, which are covered only with small reticulated scales, and the strong thick talons, somewhat blunted at the points, but little curved, and scarcely, if at all, retractile. Of these characters the most obvious is the absence of feathers, to a greater or less extent, on the head and neck, a mark of distinction which, like all the rest, is closely connected with the habits of the birds. Thus it has been pointed out that in other groups a falling off or thinning of the feathers is the frequent result of feeding upon flesh, especially when in a state of decay. The barrenness of these parts in the Vultures enables them, moreover, to burrow in the putrid carcasses on which they prey, without risk of soiling their plumage.

It is almost unnecessary, continues Mr. Bennett, to point out the great utility of the strong deep-curved bill of most of the Vultures, in tearing to pieces the carcasses on which they feed, and consigning them in large masses to their maws. The nakedness of their legs may be regarded as dependent on the same causes, and serving the same purposes as that of their heads and necks. But the character which has the strongest influence on their economy must be sought for in the

structure of their claws. While the Falcons are enabled, by means of their strongly-curved, sharp-pointed and highly retractile talons, to seize their victims with an irresistible grasp, and to convey them through the air, the Vultures are restricted, by the obtuseness of these organs, their want of the necessary curvature, and the almost total absence of retractility, to the use of their beaks alone in the seizure of their prey, which they are quite incapable of transporting with them in their flight, and are consequently compelled to devour upon the spot. It is to this simple modification of structure that they are chiefly indebted for that propensity for preying upon carrion, which has obtained for them all the opprobrious epithets that stigmatize them throughout the world.*

They are birds of gregarious and social habits amongst themselves, herding together in large flocks. The Vulture seldom makes a solitary meal, "for wheresoever the carcass is there will the Eagles (or Vultures) be gathered together." They seldom attack a living animal, unless it be wounded or otherwise disabled. They are exceedingly voracious, and in general gorge themselves so as to be for a time incapable of active exertion; they become sluggish and indolent, remaining on the spot with their heads so much retracted within the collar of feathers that generally adorns the lower part of the neck, as to be almost invisible, their wings at the same time hanging listlessly over their feet, and thus they remain till urged by hunger to go in quest of another repast; and as it may be some days ere they can procure another ban-

* Gardens and Menagerie of the Zoological Society.

quet, the strength of their frame enables them to bear hunger for a very long period. These surfeits and protracted fasts, which would not fail to be injurious to animals of a different constitution, do not affect the Vulture tribe, but the food thus so amply obtained appears to be capable of sustaining life for a considerable time. The Vultures are birds of immense wing, in proportion to the weight of their bodies; and their plumage is so little liable to be injured by weather or by accident, on account of the great elasticity of the feathers, that they appear to delight in alternate exposures to wet and dry, to soaking rain and the sun's rays. The food in which they delight imparts to their whole bodies so fœtid an odour, that few feel desirous of approaching them a second time after a heavy meal. These birds are but sparingly scattered over the south of Europe. In Egypt and the tropical parts of Africa and America they are more numerous.

There are four, if not five, distinctly-marked genera in the family *Vulturidæ;* that which is nearest in structure and habits to the swimming order, which joins the raptorial in the great circle of the feathered tribes, is, in the opinion of Mr. Vigors, *Neophron*. The elongated bill, longitudinal nostrils, and their nearly medial position, carrion habits, and other characters, appear to indicate the propinquity of the genus to the Gulls. It is evidently an aberrant form; its members are comparatively weak, and the head is more covered with plumage than in the typical species. The generic characters are — bill lengthened, slender, straight, with a distinctly-hooked tip; cere extending half the length of the bill; nostrils longitudinal, nearly medial

face and part of the neck naked; wings ample, third quill longest; legs of mean length and strength; tarsi reticulated; toes united at the base; claws long, slightly hooked, and blunt. The only species of this family which has ever been found to resort to this country belongs to this genus, and is the Egyptian Vulture (*Neophron perenopterus*), called also, from its abundance in Egypt, "Pharaoh's Chicken."

This bird is one of the smallest of the Vultures, being little larger than a raven. The cheeks and throat are naked, and of a livid yellow colour. The plumage of the adult male bird is white, with the exception of the quill-feathers, which are black. The young are of a dull rufous-brown. It is spread over the whole of the hotter portions of the Old World, from Spain to the East, throughout Greece, the islands of the Levant, Turkey, and throughout the greater part of Africa.

The Egyptian Vulture courts the society of man, and from its useful propensities has acquired protection and honour at his hands. The ancient Egyptians paid divine honours to these birds, and often represented them in their sculptures and paintings; and though the Mussulmen of the present day do not actually worship them, they treat them with much respect, as very important birds in a country where cleanliness is so essential, but so much neglected. In the neighbourhood of Cairo large flocks of them are to be seen, and no person, according to Bruce, is permitted to molest them. Their general food is carrion and garbage of all kinds.

The genus *Sarcoramphus*, distinguished by the head

and neck being formed with carunculated membrane or wattles, contains two of the most splendid birds in the family, the Condor (*S. condor*) and the King Vulture (*S. papa*). They are both peculiar to the New World. The elevated fleshy or rather cartilaginous caruncle attached to the base of the upper mandible of the males, and the loose folded skin of the neck, give to these birds a peculiar and characteristic appearance.

Of the great Condor of America many exaggerated tales had been narrated, previous to its history assuming a more authentic appearance from the inquiries and observations made by Humboldt, with regard to the habits of the living bird in its free and native state. The greatest authentic measurement of this bird, in the extent of its wings, appears to be about fourteen feet, but it is not often found of this gigantic size. M. Humboldt met with none that exceeded nine feet in the expanse of its wings, and was assured by many credible inhabitants of the province of Quito that they had never shot any that measured more than eleven. The usual length of the bird appears to vary from three to four feet. Notwithstanding the very marvellous accounts which have been given of the Condor, it is still a most remarkable and interesting bird. It dwells more loftily than the whole class, and the regions of storm and earthquake which it inhabits are of themselves well calculated to give it a very peculiar importance.

The lofty ridge of mountain rocks that traverses the continent of South America, from the Straits of Magellan to the seventh degree of north latitude, is the ha-

bitat of these mighty birds of prey. Here, in the regions of perpetual snow, 15,000 feet above the level of the ocean, the Condor rears his brood in safety, and may be seen perched upon some lofty pinnacle, till hunger compels it to seek the denser atmosphere of the plain beneath, in quest of food. Unlike the true Vultures, they never assemble in large flocks, and not more than three or four are ever seen grouped together; but, like the rest of their family, they love to feed upon carrion, and will sometimes attack a living animal. Two of these birds, acting in concert, will frequently attack a puma, a llama, a calf, or even a full-grown cow. They will pursue the poor animal with unwearied pertinacity, lacerating it incessantly with their beaks and talons, until it falls, exhausted with fatigue and loss of blood. Then, having first seized upon its tongue, they proceed to tear out its eyes, and commence their feast with these favourite morsels. The intestines form the second course of their banquet, which is usually continued until the birds have gorged themselves so fully as to be incapable of using their wings in flight. The Indians, who are well acquainted with this effect of their voracity, are in the habit of turning it to account for their amusement in the chase. For this purpose they expose the dead body of a horse or a cow, by which some of the Condors, which are generally hovering in the air in search of food, are speedily attracted. As soon as the birds have glutted themselves on the carcass, the Indians make their appearance armed with the lasso, and the Condors being unable to escape by flight, are pursued and caught by

means of these singular weapons, with the greatest certainty.*

The general colour of the male bird is black, intermingled more or less with a greyish tinge. Wing-coverts tipped with white; secondary quill-feathers white on the outer side. The ruff or collar round the neck, composed of downy feathers, is white, and the naked parts above dusky-reddish. The legs, which are very thick and powerful, are coloured of a bluish-grey, intermingled with whitish streaks. Their elongated toes are united at the base by a loose but very apparent membrane, and are terminated by long black talons of considerable thickness, but very little curved.

The King Vulture (*S. papa)* is not a bird of the mountains, but resorts to the low savannahs in the inter-tropical regions of America and the adjacent islands, where animal life abounds, and death is soon succeeded by putrefaction. It is the most elegant, although among the smaller species of the Vulturine family. Its colouring, instead of being dark and sombre, like other Vultures, is rich and striking. The naked skin of the head and neck is deeply tinged with mingled orange and violet; over its beak there hangs a loose comb of bright orange; the iris of the eye is pearly-white. The general hue of the plumage is bright, and the colours well contrasted with each other. A collar or ruff of soft downy feathers, of a deep ashy-grey, surrounds the base of the neck. The back and tail-coverts are of a bright fawn, which becomes lighter and lighter as the bird advances in age; and

* Gardens and Menagerie of the Zoological Society.

the quill-feathers of the wings and tail, together with the larger coverts of the former, are glossy black.

Like the other Vultures, these birds perform the office of scavengers in the economy of nature, by removing from the face of the earth putrefying carrion. They lead a life of solitude, though occasionally seen in pairs. They perch upon the highest trees, and build their nests, it is said, in the hollow of the trunk. The King of the Vultures appears to uphold his authority and privileges over the less noble race, when they are collected together to enjoy a meal. Waterton informs us that, while sailing up the Essiquibo, he observed a pair of these birds sitting on a naked branch of a tree, with about a dozen of the common species waiting to begin the feast upon a goat, which a jaguar had killed the day before, and been obliged to abandon; still, though tolerating the company of its inferiors, it appeared to guard its royal privileges with jealous care. The same gentleman relates that he caused the body of a large serpent he had killed to be carried into the forest, in order to watch the result. For the first two days, he observes, not a Vulture made its appearance at the spot, though I could see here and there, as usual, a *Vultur aura* gliding, on apparently immovable pinions, at a moderate height over the tops of the forest trees. But during the afternoon of the third day, when the carcass of the serpent had got into a state of putrefaction, more than twenty of the common Vultures came and perched upon the neighbouring trees, and the next morning, a little after six o'clock, I saw a magnificent King of the Vultures. There was a stupendous mora

tree close by, whose topmost branch had either been dried by time or blasted by the thunder-storm; upon this branch I killed the King of the Vultures, before it had descended to partake of the savoury food which had attracted it to the place. Soon after this, another King of the Vultures came, and after he had stuffed himself almost to suffocation, the rest pounced down upon the remains of the serpent, and stayed there till they had devoured the last morsel.

Of the genus *Vultur*, which is distinguished from other genera of the same family by the nostrils being transverse, instead of longitudinal, one of the largest species is the Sociable Vulture (*Vultur auricularis*). In size this gigantic bird is fully equal to the Condor, the largest specimens measuring, according to Le Vaillant, upwards of ten feet in the expanse of their wings. The head and greater part of the neck are of the colour of raw flesh, and exhibit in their adult state no appearance of down or feathers, but only a few scarcely perceptible hairs. The throat is covered with blackish hairs, and the lower part of the neck behind with a kind of ruff of crisped and curling feathers of the same colour, within which the bird withdraws its head in a state of repose, especially after feeding, an attitude which is common to most Vultures. It differs essentially from the Condor, by the absence of the caruncle, which in them surmounts the fore part of the head and base of the beak, and by the substitution of a lateral folding of the skin into a kind of membranous expansion, partly enveloping the large open ears, and descending for several inches along the side of the neck. The colour of the feathers is blackish-

brown. The beak is of great strength, remarkably deep, and powerfully curved at the point. The eyes are large, and depressed beneath the level of the general surface, and the head is remarkably broad and flat, bearing in this respect a distant resemblance to the Eagle. The legs are short and thick; the toes, especially the posterior one, somewhat elongated; and the claws thick, strong, blunted at the point, and very slightly curved.*

Like all the other Vultures, Le Vaillant says, this is a bird of the mountains; the sheltered retreats formed by their caves and fissures constituting its proper habitation. In them it passes the night and reposes, after it has sated its appetite during the day. At sunrise, large bands are seen perched on the rocks at the entry of their abodes, and sometimes a continued chain of mountains exhibits them dispersed throughout the greater part of its extent. Their tails are always worn down by friction against the stones between which they thrust themselves, or on which they perch; while the Eagles, seldom walking, and frequently perching upon trees, preserve them more entire. Those of the Vultures are moreover injured by the soil of the plains, inasmuch as they cannot raise themselves into the air at once, but only after running several paces forwards, and by a forced contraction of the limbs. The flight of the Vultures is, nevertheless, no less powerful and lofty; they raise themselves to a prodigious height, and disappear entirely from view.

The Sociable Vulture is a native of Africa, and a

* Gardens and Menagerie of the Zoological Society.

rare bird. It is not met with in the vicinity of the Cape, but is common in the interior, especially in the country of the Namaquas. It builds its nests in the fissures of the rocks, and the female lays two or, rarely, three eggs. During the time of incubation, the male keeps watch at the entrance of the cavern, and thus renders their retreat easy of detection; but, on the other hand, it is always very difficult of access. The interior offers a most disgusting spectacle, and is infected by an insuperable stench. As they live in formidable bands, a single mountain sometimes conceals as many nests as there are cavities fit for their reception. They appear to agree together exceedingly well, for two or three nests are sometimes seen placed side by side in the same cavern.

It is not necessary to particularize the several groups of which this family is composed; sufficient, perhaps, has been said to indicate their general character and the peculiar office they are destined to fill in the economy of nature. Where their presence is most required, there are they to be found in abundance. Their head-quarters are under the equator; they abound more in the southern hemisphere than in the northern, and they do not resort at all to the high latitudes of the latter. They are the largest and most powerful birds of prey that are found in the warm regions, as the Eagles are in the colder latitudes.

There is one species, however, which differs so considerably from the rest, and forms so obvious a link between the Vultures and the Eagles, that some notice of it may appear requisite. The bird alluded to is the Bearded Vulture (*Gypaëtus barbatus*), and so nearly does it resemble the Eagle in exterior appear-

ance, that Aristotle and Ælian referred it to the accipitrine tribes, but distinctly indicated its near affinity to the Vultures. On the other hand, the common people of all ages and countries in which it has been known, from a close observation of its manners, seem uniformly to have associated it with the Vultures, and Linnæus adopted this classification, which has since been generally followed.

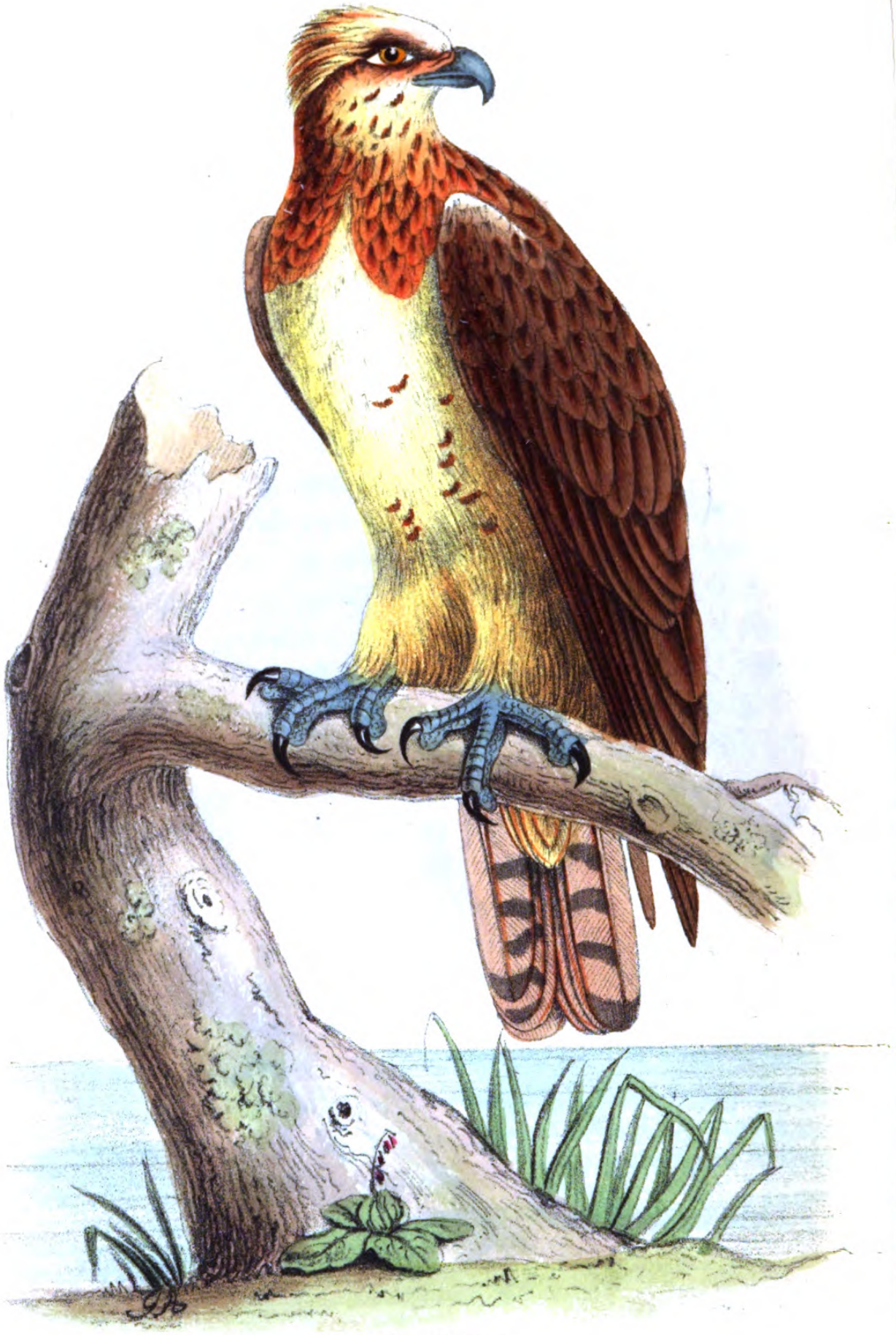
In general appearance and external form, the Griffon, as this bird is also named, agrees more closely with the Eagles, and with the Vultures in internal structure and habits. It combines the upright bearing and audacity of the one with the appetite for carrion that distinguishes the other. The head and neck, as well as the tarsi, are furnished with feathers, as in the Eagles. The eyes are level with the head, the wings half-expanded when in repose, and the craw sticks out after a meal, as in the Vultures. The principal point in which it differs from both in external character consists in the tuft of bristly hairs which take their origin partly from the cere that covers the base of the beak and partly from the under mandible, and are directed outwards and downwards in such a manner as to give rise to that appearance from which it has received the distinctive epithet *barbatus*. The bill is lengthened, very strong, and much hooked at the point. The legs are short and stout, and the talons are considerably curved and sharp; the outer toes are partly versatile.

The Lämmer Geyer, or Lamb Vulture, as it is entitled by the natives of the German Alps, is the typical bird. It emulates the Eagle in its daring and rapacious habits, feeding alike on carrion and living

prey. Thinly scattered throughout all the great mountain-chains of Europe, as well as of Asia and Africa, it is the terror of the flocks which graze on the declivities or amid the secluded valleys beneath. Its habitual prey is said to be the chamois, the wild goat, the Alpine hare, the marmot, etc.; the young, the sick, and the feeble of the larger quadrupeds are its victims; nor indeed can the old and vigorous always escape, if we are to believe the accounts that have been handed down to us. Sailing in the air above the snow-clad summits of the stupendous Alps, it watches until the unwary chamois approaches the edge of a precipice, or traverses the pass of a narrow ledge, and then, sudden and impetuous as the avalanche of its native regions, down it rushes, hurling the helpless animal into the abyss below, when proudly wheeling round for a few gyrations, as if to contemplate the effects of its sanguinary deed, it plunges down to gorge on the yet quivering flesh.

Unless drawn together by the attractive qualities of some putrid carcass, these birds do not appear to congregate in bands, but they roam about for food singly or in pairs.

Between the typical Vultures, which feed exclusively on carrion, and the more noble species of raptorial birds, which disdain to partake of any other prey than that which they have themselves deprived of life, there are several gradations of form and habits, serving as links to connect the two families. The Bearded Vulture is, however, the most striking and obvious example in its own family.



The Osprey.

Eagles.

THE *Falconidæ*, or Falcons, Mr. Swainson observes, exhibit the perfection of their order; they are distinguished by a much shorter and sharper bill, more or less toothed, and by very acute and strongly-curved talons. Their form in general is lighter, their flight more graceful, and their courage much greater than what we see in the Vultures; unlike these latter, also, they live almost exclusively upon animals which they themselves have killed, resorting only to carrion or dead game when pressed by extreme hunger. The geographic range of this family, as a whole, is universal, for wherever other animals exist, there also these deadly enemies are to be found. From the arctic regions to the most southern limits of Australia, and from the western shores of Africa to the vast forests of Brazil, different races of the Falcons abound, and yet there are very few species which inhabit widely remote countries. Some of those whose chief metropolis is in Europe extend their range to the most northern parts of the New World, and even spread in the contrary direction to the more temperate latitudes of Asia; but the species of tropical America are totally different from those of western Africa, although many of these latter extend their range to the Cape of Good Hope, and some few appear also to be inhabitants of India.*

* Natural History and Classification of Birds.

The *Falconidæ* have been divided into the following sub-families, viz., *Aquilinæ* (Eagles), *Accipitrinæ* (Hawks), (*Falconidæ*) Falcons, (*Milvinæ*) (Kites), *Buteoninæ* (Buzzards.) The short, strongly-curved, and toothed bill of the Falcons, combined with their extreme rapidity of flight, and more daring and courageous demeanour, procures for that group the typical position in the family. The Eagles have a more lengthened bill, and in some characters only approximate to the last, and the Buzzards show an inferior development of those parts where strength and energy are thought to reside, whence they are regarded as the two aberrant groups, connecting the present with the neighbouring families. The other sub-families of *Accipitrinæ* and *Cymindinæ* will therefore occupy the positions of the two sub-typical groups on either side of the *Falconidæ*, according to their relative affinities.

Of diurnal birds of prey, Eagles (*Aquilinæ*) are the largest and most powerful. The office they perform requires considerable daring, strong muscular power, and a sturdy frame. They keep in check the excessive increase of various animals living within their domains, and thus keep them within proper limits. Dwelling in the most lofty regions, the Eagle braves the tempest and the severity of the seasons, fearless as the rock on which he rests. Unlike the Vulture, the Eagle has often to grapple with its prey, to seize its victim in its attempts to escape by flight, and to contend with the desperate struggles of the dying animal, which is often of considerable size; and when at length the breathless carcass lies extended beneath his talons, his powerful beak divides the reeking flesh.

The Eagles bear a certain analogy to lions and tigers among predatory mammalia. Like them, they can descry their prey from afar, and rush or spring, as it were, upon their victim with impetuous force. This action evidently demands great muscular power, to produce the required impetus, and strength of frame to withstand the shock which must unavoidably follow the descent of so weighty a body,* propelled with such force from an elevation of perhaps 1500 or 2000 feet above the ground. The bones of the Eagle are accordingly more solid, and specifically heavier than those of other birds, and though, observes Mr. Mudie, like the bones of all birds, hollow, for the free admission of air, yet they are fortified by cross pieces extending from side to side of the tubes, so as to offer complete resistance to every strain of the naturally violent motions of the birds, and also to any casualties to which in the course of their daring lives they may be exposed. Their muscles are as firm as pieces of cable, and their tendons almost as rigid as dried catgut. Their very feathers have a firmness and strength in them that alone would tell the daring and enduring character of the birds.†

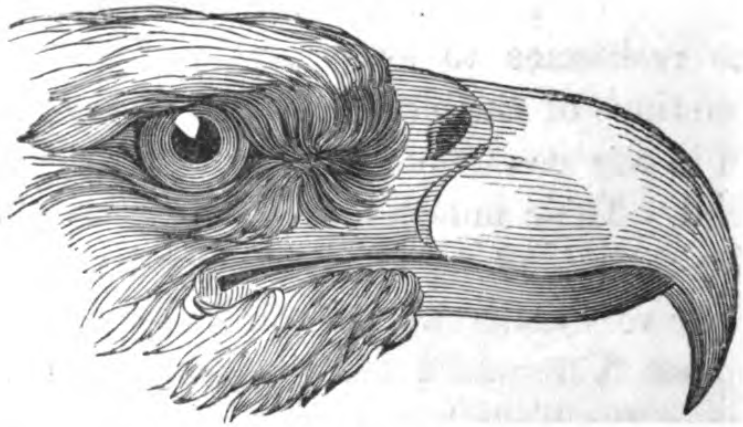
The wings of the Eagle are broad and firm, and strike the air with force, not like those of the silent Owl, that, spectre-like, glides through the gloomy twilight unseen and unheard, covered with downy plumage that noiseless flaps the air, but with large and rustling quills, that bravely bear the animal in open day, in face of the sun, to seek its living prey.

* An eagle often weighs 12 lbs. or more.

† Feathered Tribes of the British Isles.

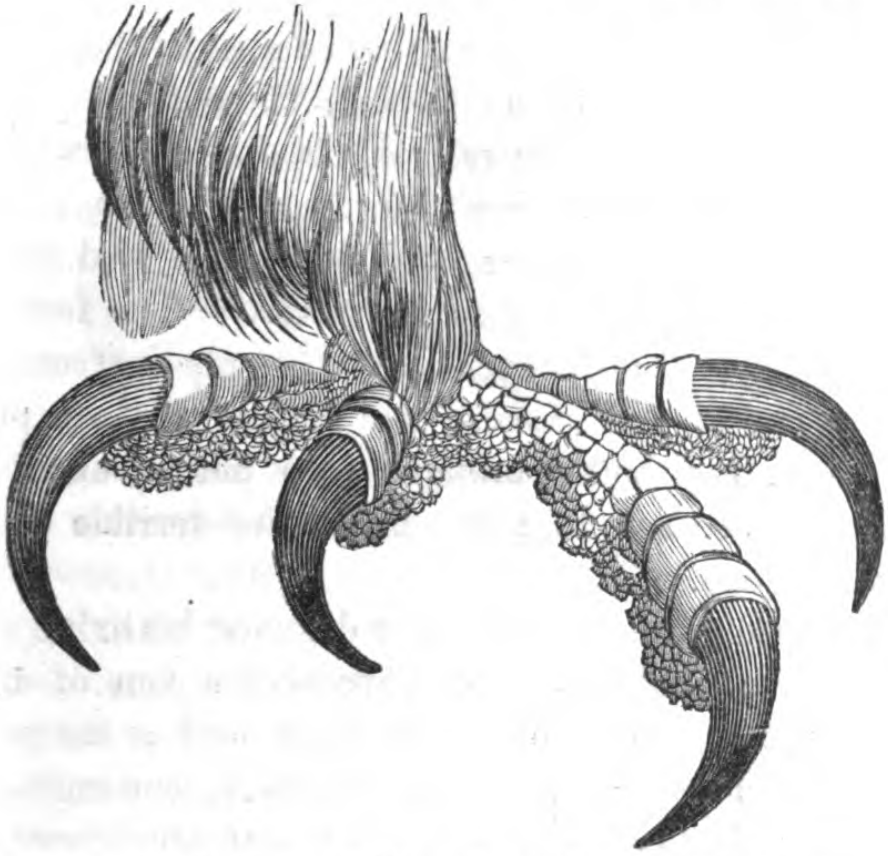
Compare the Eagle's eyes, too, with those of the Owl: the former, from the lateral position of their orbits, can command a range of half the hemisphere; the eyes of the Owl are directed forwards, the sight meeting in one focus; they are large and gaping, to collect as many rays of light as possible from the gloom in which it loves to prowl abroad; those of the Eagle, when the bird is in repose, are expressive of his stern and fearless character, and when excited by the stimulus of hunger, display the energy and resistless force of his emotions.

The talons of the Eagle being the instruments of death, the beak is used as a cutting and rending instrument only, and it is well fitted for such a purpose;



there are, however, considerable modifications of form in this organ as well as the feet, in adaptation to the peculiar habits of each species, being more or less lengthened, hooked, and curved in the margin. The general characters of the bill are very strong, straight in the basal part, which is covered with a cere, and strongly curved at the point; *tomia*, or cutting edges of the upper mandible, entire, or with an obtuse lobe or festoon, which enables the bird to take a firmer hold

of its food, and more readily to sever it into morsels; the under mandible is of firm texture, nearly straight in the *tomia*, and truncated at the tip; the nostrils are in the cere, and oval, being placed transversely. To give more effect to this rending instrument, the neck is short and remarkably muscular. In the fee great muscular development is also apparent; they are remarkably stout, and in the Mountain Eagle the tarsi are always feathered; others have them more or less plumed, and some are entirely destitute of feathers on these parts. The toes are very stout, and the tendons which run up the leg are among the most firm and rigid of animal substances. The claws are large and much hooked; they are very sharp at the points



and are partially retractile, or, rather rise, by means of

the elastic ligaments, as soon as the feet come in contact with a pinnacle of rock or other perch, so that the whole base on which the bird rests is the padded parts of the toes, and the talons are reserved for their proper purpose in the economy of the bird—that of clutching and killing prey. The claws on the hind toe and exterior one in front are usually the largest. In all the species the toes are perfectly free in their lateral motions, so that they can clutch at four nearly equidistant points. In those which feed exclusively upon land animals, the toes have no other motion than this, and that of clutching together with great power; and they are, strictly speaking, tearing claws, round at their convex sides, but grooved with two sharp edges on their concave ones, so that while they clutch, they tear and lacerate with those edges. In the species which subsist chiefly by fishing, the outer toe is reversible, so that the claws grasp two against two, and in these the claws are not grooved, as that would only tend to cut through the hold which the bird gets of the fish that it clutches in the water.* The feet and claws are, generally speaking, the only instruments Eagles use in the capture and killing of their prey, the beak not being brought into action until the animal has ceased to throb under the terrible clntch of the talons.

The Mountain Eagle having descried his living prey from an altitude far, far beyond the ken of man, shoots down with impetuous force, and as the whole momentum is delivered with the claw, the animal is not only dashed to the ground, but the claws are

* British Cyclopædia.

plunged deep into its flesh. Instantaneous death usually ensues upon this stroke, particularly with smaller game; should the pounce not be fatal, the clutch immediately follows. But as an uninterrupted stoop from his greatest height would be sufficient, says Mr. Mudie, to dash even an Eagle to pieces, he has the power of slackening his speed as he descends, so as to temper the ultimate effect to the necessity there is for it, otherwise, strong as he is, he might be injured by collision with the ground. The large and powerful tail which the Eagle possesses is here called into service, and, with its broad firm-set feathers spread against the yielding air, checks the velocity of the descent or guides its course. When the Eagle has its young ones to provide for, the prey is borne off to the eyrie on the ledge of some mountain pinnacle. Here the talons are again effective, and the strength of the tendons and muscles of the legs are tried. Provision having thus been procured for all the tenants of his mountain home, he is at rest, and all under his dominion are safe; for even the boldest and swiftest-winged Hawks keep at a distance from the retreat of the Eagle, and when his shadow passes over the valley not a wing moves but his own.

In their form, as well as in the strength of their feathers, the wings of Eagles are very powerful; but they are broad and rounded, and not adapted for so rapid flight as those of some others of the family. They are, however, much stronger, and probably the strongest in the whole class of birds; beautifully and wonderfully formed for the rush so impetuous, though not of long duration, which is sometimes needed, and

also for elevating the bird again into the upper regions of the air, encumbered, it may be, with the reeking carcass of its prey. The first quill is short, and the fourth is the longest in the wing, but so many of them are of the same length that the wings have a blunt and truncated appearance,

That the vision of Eagles is exceedingly acute, and that they depend solely on that sense when in search for food is acknowledged. The eyes are set in the centre of the head, and have a lateral direction, so that they command nearly the whole horizon. They are deeply sunk beneath the level of the cheeks, and above are projecting orbits and orbital feathers, which not only protect them from injury, but prevent the rays of light from above interfering with those that meet the eye from below. In no other birds, observes Mr. Yarrell, is the power of vision more conspicuous than in the Eagles and *Falconidæ* generally.

The Sea Eagles, in certain habits and characters, approximate nearer to Vultures than to Mountain Eagles; they are far less nice as to food than their congeners, and will often regale themselves upon the dead carcasses of animals which may be thrown upon the shore. The tarsi are not clothed with feathers, as in the land Eagles, and they are covered with reticulated scales like those of the wading birds; the claws are larger and sharper, and have more the character of prehensile hooks than of instruments of slaughter. The toes are also more adapted for clutching, so as to take hold of, lift, and carry a weight.

The structural difference observable between the mountain Eagles and those of the sea point out the

different habits of each, and are an index to the localities which each is destined to inhabit. The former do not require such fine points to the claws, inasmuch as their prey is on the ground when they make the pounce with their talons, and thus they act upon a solid body, which compensates for the comparative bluntness of the claw, and as the blunted claw inflicts the more severe and painful wound, it is the best for their habits. But the fishing Eagles have to strike their finny prey against the water only, which has no cohesion as the earth has, and therefore it gives way like an elastic spring; and if the points of the claws were not very sharp they would not penetrate the skin of the fish. So also if they were furrowed and grooved, like the talons of the land Eagles, which use theirs in killing the prey, and not in clutching it for the mere purpose of lifting, they would tear and lacerate, and, in the case of a heavy fish, cut their way out of its substance. By being round and smooth on their under sides, the talons of the fishing Eagles have no tendency to do this. The articulations of the toes are also admirably fitted for retaining a firm hold. They contrast much more completely in the distal joints than those of the land Eagles; they, in fact, bend till the point of the claw is on the same level with the root, and thus every single claw lifts like a perfect hook, while the connection of the foot keeps them all in their places. The strain of the clutching is at the same time not wholly upon the muscles which contract the toes: for the bird does not dangle the fish with the toes at full length, but binds all the joints, which throws part of the strain upon the ligaments, and the

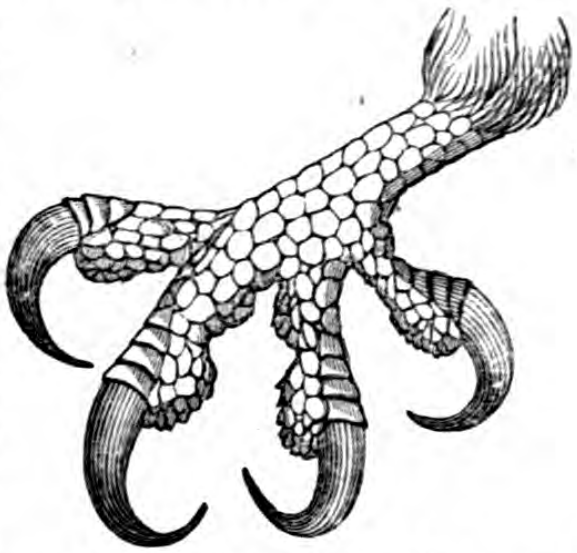
rest of it is parted among all the muscles of the legs.*

As the fishing Eagles have frequently occasion to immerse their legs in water when seizing their prey, and sometimes to struggle with it on the surface when that prey is large, the tarsi are destitute of feathers, and the plumage on the under part of the body and the under sides of the wings is of that texture which is best adapted to resist the effect of water, and at the same time to prevent any injurious consequences to the bird from a sudden plunge into an element which is frequently of a very low degree of temperature.

One of the most characteristic species among the fishing Eagles is the Osprey (*Pandia haliæetus*), which frequents the lochs, and mouths of the larger rivers of Scotland and Ireland. It is sometimes called the Bald Buzzard, from the white upon its head, and is the Fish-Hawk of the Americans. The adaptation of structure to the habits of this bird is beautifully displayed in this species. No bird of prey, observes Mr. Mudie, is better armed than the fishing Eagle. Its beak is of the most powerful form, with a partial tooth, very much hooked at the point, and of that dark colour which belongs to all very powerful beaks. The tarsi are also very short and strong, free from feathers, but covered with scales; the under parts remarkably tuberculated, and the claws, more especially that on the outer toe, very large and strong; but all rounded on the under side, and more adapted for clutching strongly than for tearing. The outer toe, which in the repose of the bird is turned

* British Cyclopædia.

forwards, admits of a (partially) reverse motion, so that two toes can act against two, and thus take a better lifting hold of the prey. The firm grasp which the bird is thus enabled to obtain, with the aid of its sharp and powerful talons, of its struggling victim, gives it an advantage over most other birds that prey upon living fish. The lower surface of the whole foot, moreover, particularly the raised pads which are placed under the joints, is studded with hard and sharp pyramidal points, which render their grasp more tenacious.



The prevailing colour of this species on the upper part is blackish-brown, with the exception of the hind part of the head and part of the neck, which is whitish. The under part is dull white. The under sides of the wings and the whole of their marginal parts, as also those of the outer tail-feathers, and the plumage on the under parts of the body, are remarkably close and compact.

In its general form the Osprey is strong and compact, the head small, the wings very long and powerful, and sharp pointed, the second quill being the longest; but the tail, which is not required by the habits of the bird for rapid turnings or swift evolutions, is short and square. The tarsi are short and strong, not feathered, but covered with reticulated scales. The claws are

strong, very much hooked, and nearly of equal size. The length of the Osprey is about twofeet, and the extent of its wings not less than five feet and a half.

The Osprey generally places its nest in a large tree near the water, whether along the sea-shore, on the margins of inland lakes, or by some large river. Sometimes one may be seen in the interior of a wood, a mile or more from water; it is of large dimensions, occasionally being four feet across, and is formed of a mass of materials sufficient to make the depth equal to the diameter. Large sticks, mixed with seaweeds, tufts of strong grass, and other substances, form its exterior, while the interior is composed of seaweeds and finer grasses.*

The White-headed Eagle (*Haliæetus leucocephalus*) or the Bald Eagle, the adopted emblem of America, a bird of considerable interest, and, according to Wilson, the most beautiful of his tribe in that part of the world, requires some notice. Audubon, in giving the character of this bird, says, that the great strength, daring, and cool courage of the White-headed Eagle, joined to his unequalled power of flight, render him, highly conspicuous among his brethren.

The great cataract of Niagara is mentioned as one of its favourite places of resort, not merely as a fishing-station, where it is enabled to satiate its hunger upon its most congenial food, but on account also of the vast quantity of four-footed animals which, unwarily venturing into the stream above, are borne away by the torrent, and precipitated down those tremendous falls. The number of birds of prey of various kinds

* Ornithological Biography.

which assemble at the foot of the rocks, to glut themselves upon the banquet thus provided for them, is said to be incredibly great; but they are all compelled to give place to this Eagle, when he deigns to feed upon carrion; and the crow and the vulture submit without a struggle to the exercise of that tyranny, which they know it would be in vain to resist.

The White-headed Eagle is seldom seen alone, the mutual attachment which two individuals form when they first pair seeming to continue until one of them dies or is destroyed. They hunt for the support of each other, and seldom feed apart, but usually drive off other birds of the same species.

These birds breed early in the year. The nest, which in some instances is of great size, is usually placed on a very tall tree, destitute of branches to a considerable height, but by no means always a dead one. It is composed of sticks, from three to five feet in length, large pieces of turf, rank weeds, and Spanish moss in abundance, whenever that substance happens to be near. When finished, it measures from five to six feet in diameter, and so great is the accumulation of materials, that it sometimes measures the same in depth, it being occupied for a great number of years in succession, and receiving some augmentation each season. The eggs, of which there are annually two or three, are of a dull white colour, and equally rounded at both ends, some of them being occasionally granulated.*

This species is about thirty-five or thirty-six inches in length, and seven feet in the expanse of its wings.

* Audubon.

In its youthful plumage it closely resembles the great Sea Eagle, but after the third year the head, neck, and tail become pure white, the rest of the plumage being deep chocolate, approaching black. The beak is of a bright yellow; the cere and legs are likewise yellow; the talons deep blackish-brown; the latter are long, strongly curved, of considerable power, and extremely sharp at the points.

One of the largest and most powerful of the Sea Eagles is the white-tailed, cinereous, or great Sea Eagle (*Haliæetus albicilla*). It is sometimes seen on the wilder parts of the shores of Britain adapted to its habits, especially on the rocky and mountainous coast of Scotland, where it is called the "Erne," or "Bog Eagle." Like most of the Eagles, it is subject to considerable changes in the colour of its plumage previous to its assuming that of its mature state, which is not until its fifth year. Its general colour before it has lived to that age is dark brown, with the margins of the feathers of a lighter tint; on the lesser coverts, the scapulars, and the throat, these margins are very pale, approaching to a reddish-straw colour. The under part at this stage is spotted; and among the varied spottings there are always some patches of white. The tail is dark brown, but the other parts are much mottled with lighter brown. The bill is then of a leaden grey or bluish tinge. As the bird approaches maturity the feathers on the head become paler in their tint, and the bill alters to a straw colour; the cere and irides acquire a tinge of red; and the pale margins of the feathers on the upper parts and the throat fade off, rendering the brown more uniform

and unbroken. The mottlings also disappear from the under part of the bird, which becomes a deeper brown than the upper. The most remarkable change, however, is in the tail and tail-coverts, which, from being the darkest parts of the bird in the early plumage, become pure white in maturity.*

To judge from the formidable appearance of the large hooked bill, and the extraordinary size and curvature of the talons, with the robust and sturdy form of the Harpy Eagle (*Harpyia destructor*), we might be led to imagine that this was one of the most powerful and terror-bearing species of the family; but on attentively observing the bird there will be found to be a restlessness about it which is not seen in the more typical and powerful Eagles, and its general aspect does not exhibit that sturdiness or degree of strength and endurance which is characteristic of its more courageous brethren. The feathers are loose in comparison, and the wings are short, not reaching, when closed, beyond the middle of the tail. This latter character would seem to indicate a habit, like that of the short-winged Hawks, of searching for its prey near the surface of the ground, but the magnitude of the bird would cause his approach to be observed from some distance. The habits of this Eagle in a state of nature are not, however, correctly known. The tales that have been told of his feats of strength and daring are no doubt somewhat exaggerated. According to Hernandez, he does not scruple to attack the most ferocious beasts, and even man himself. It is reported by other travellers that he commonly feeds upon the

* British Cyclopædia.

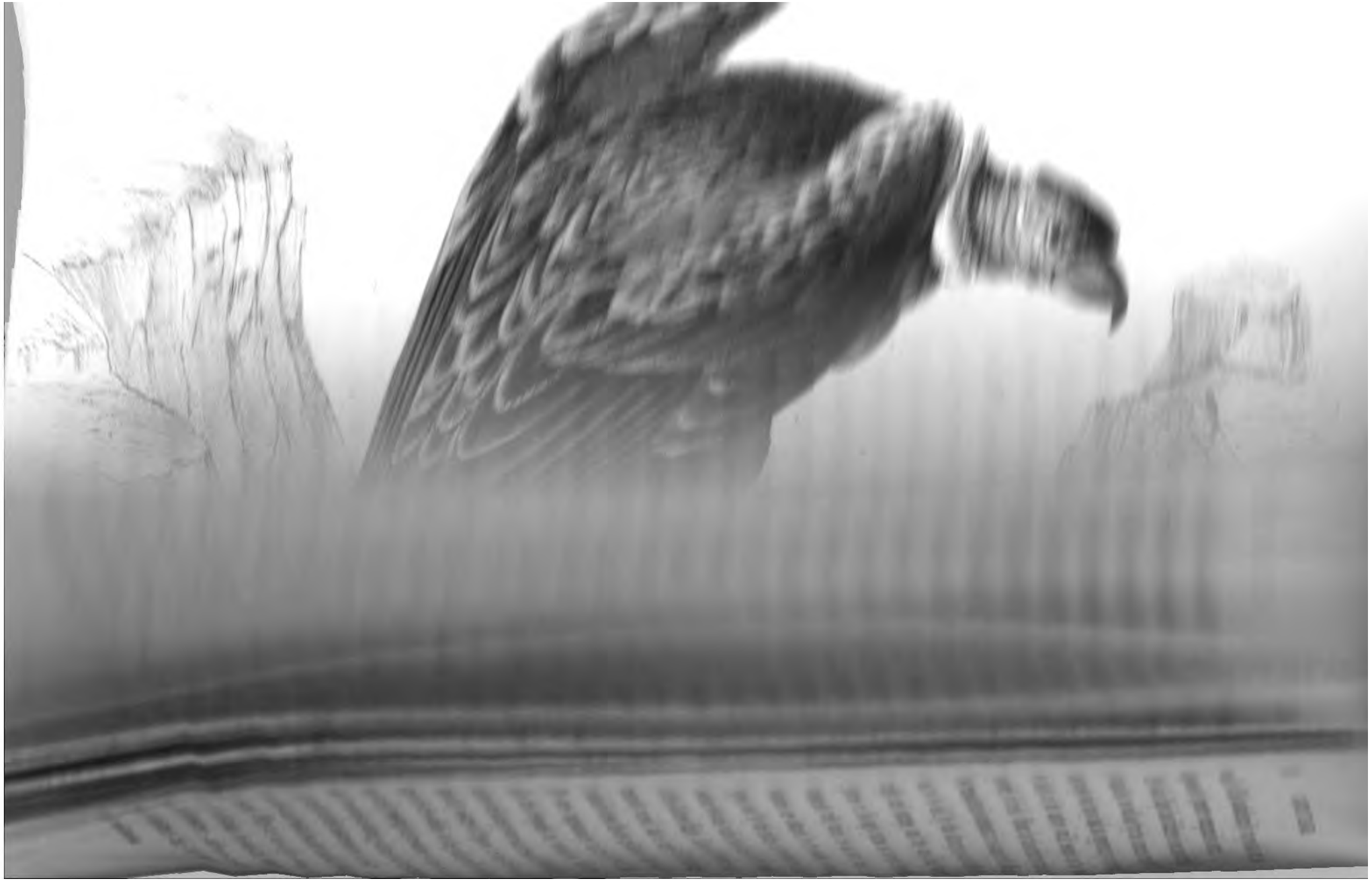
two species of sloth which are found in the forests of Guiana, and carries off in his talons fawns and other young quadrupeds.

The Harpy Eagle is not often met with, and it appears to be nowhere abundant. Mexico, Brazil, and other parts of South America, are the localities in which it is found. The usual length of this bird from beak to tail is three feet and a half, or even more. The entire head is covered with a thick, soft, downy plumage of a light slaty-grey. From its back part arises a crest composed of numerous broad feathers, increasing in length towards the middle line of the head, and thus assuming a rounded form, of a dull black, with the exception of a slight margin of grey on the tips of the longer feathers, and a more extensive tinge of the same colour on those of the sides. This crest is slightly raised above the level of the feathers of the back of the neck when the bird is quiet, but is capable of being elevated at right angles to them upon any sudden excitement. Below the crest the whole of the back and wings, together with a broad collar encircling the fore part of the neck, is black, without gloss or reflection, each of the feathers of the back terminating in a narrow, transverse, somewhat lighter streak. The under surface, from the breast backwards, is pure white, and the plumage of the legs is marked on the same ground with transverse blackish bars. The tail is crossed by four transverse black bands, of about equal breadth with the four alternating whitish or ash-coloured spaces; its tip is of a light ash colour. The beak and claws are black, and the legs dull yellow.*

* Bennett.

Mountain Eagles.

Mountain Eagles are distinguished by peculiar characteristic features from those which frequent the waters or their vicinity. The Golden Eagle (*Aquila chrysaëtos*) holds the supreme place amongst them. It is pre-eminently a bird of the mountain, and that in its wildest and most magnificent character, where the naked rock protrudes its barren crags from out the rank and tangled herbage that spreads over the scanty soil—the species which has been elevated by common consent for ages to the dignity of the kingship of birds, the monarch of the sky. It has been the aim, however, of some modern writers to endeavour to undermine his imperial throne, to question his pretensions to the dignity of sovereign, and to scrutinize his character and habits, to the detriment of the good fame which he has so long enjoyed. But if greater magnanimity, power, and majestic bearing, combined with greater courage, strength, and fortitude than is possessed by others of the feathered race, and an acknowledged awe with which he is regarded by all other birds, are circumstances which may claim for the Golden Eagle superiority over the rest of the class, there appears to be no reason why he should not retain his title and dignity. Superiority over her mate is given to the female Eagle, solely, it would appear, on account of her superior size, for it



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The Golden Eagle has hitherto been acknowledged by naturalists, as well as by the common consent of most people who have had an opportunity of observing its habits in its native wild resorts, as the most powerful of birds. Even in the northern portions of the transatlantic continent it is stated by Dr. Richardson to be held by the aborigines as an emblem of might and courage, and the young Indian warrior glories in his eagle plume as the most honourable ornament with which he can adorn himself. Its feathers are attached to the *calumets*, or smoking pipes, used by the Indians in the celebration of their solemn festivals, which has obtained for it the name of the Calumet Eagle. Indeed so highly are these ornaments prized, that a warrior will often exchange a valuable horse for the tail-feathers of a single eagle.* The stern magnanimity that fires the eye of this noble bird bespeaks his elevated rank. His every attitude indicates power and resolution, from the calm statue-like posture of repose, in which the eye alone betrays the fire within, to the gladiator-like exhibition when, sternly grasping his prostrate victim, he elevates his head, erects his quivering plumes, and concentrates his whole weight on the instruments of death.

To the wildest and most desolate mountain districts this Eagle resorts. Here in his lofty elevation, accompanied only by his mate, he seeks that seclusion which is congenial to his nature. Here on some ledge of rock they together construct their eyrie, which

* Fauna Boreali-Americana.

often serves as a permanent home as well as a cradle for their young. Here they live in peace, monarchs of their own chosen district, undisturbed by others of their race, who dare not approach their precincts, or even by their own species, for it does not appear that these birds are much in the habit of invading the territories of each other. Here they have to encounter all the inclemencies of a mountain atmosphere; and when hunger impels them to wander abroad, they scorn the neighbouring country, rising to an immense altitude in the air. From this elevated position, should they descry a luckless animal upon the ground, swift as a thunderbolt they rush through the intervening air, and clutch with deadly certainty the quivering prey. Not till the talons have done their work of death, and the prey has ceased to breathe, do they deign to look upon the carcass or touch it with their powerful beaks. The head is elevated and thrown back, the lanceolate feathers of the neck are raised, the wings are partially expanded, quivering with energy, and the tail is spread to its full extent. The prey is either devoured on the spot or borne off in the talons to the eyrie.

Although possessed of a powerful flight, observes Mr. Audubon, the Golden Eagle has not the speed of many Hawks, nor even of the White-headed Eagle. It cannot, like the latter, pursue and seize on the wing the prey it longs for, but is obliged to glide down through the air from a certain height, to ensure the success of its enterprise. The keenness of its eye, however, makes up for this defect, and enables it to spy at a great distance the objects on which it preys;

and it seldom misses its aim, as it falls with the swiftness of a meteor towards the spot in which they are concealed. When at a great height in the air its gyrations are uncommonly beautiful, being slow and of wide circuit, and becoming the majesty of the king of birds. It often continues them for hours at a time, with apparently the greatest ease.

The nest of this noble species is always placed on an inaccessible shelf of some rugged precipice, never, that I am aware of, says Audubon, on a tree. It is of great size, flat, and consists merely of a few dead sticks and brambles, so bare at times that the eggs might be said to be deposited on the naked rock. They are generally two, sometimes three, having a length of three and a half inches, and a diameter at the broadest part of two and a half. The shell is thick and smooth, dull white, brushed over as it were with undefined patches of brown, which are most numerous at the larger end. The period at which they are deposited is the end of February or the beginning of March.

They are capable of remaining without food for several days at a time, and eat voraciously whenever they find an opportunity. They swallow their food in large pieces, often mixed with hair and bones, which they afterwards disgorge. They are muscular, strong, and hardy, capable of bearing extreme cold without injury, and of pursuing their avocations in the most tempestuous weather. A full-grown female weighs about twelve pounds, the male about two pounds and a half less.

They do not obtain the full beauty of their plumage

until the fourth year, the Ring-tailed Eagle of authors being the young in the dress of the second and third years.* They are said to breed in Scotland, Ireland, and sometimes on the Snowdon Hills, in Wales. They are scarce in England, but are found in the Alps, Germany, Russia, India, and North America.

Birds of mature plumage have the summit of the head and nape of a lively golden red, the feathers being acuminated; all the other parts of the body obscure brown. The quill-feathers of the wings are rather darker than the rest of the plumage, and the insides of the legs and the tarsal feathers are of a lighter brown. The entire tail is of a uniform brownish-black, varied only by occasional transverse, narrow, wavy bars of grey, which appear to become more and more obsolete as the bird advances in age. The cere and toes are of a dull yellow, the beak bluish-horn colour, darker towards the tip; the irides hazel, and the claws deep black.

Eagles are capable of being tamed; a gentleman near Belfast once possessed one that was extremely docile and tractable. It was taken from a nest in Inverness-shire. The bird became immediately attached to its owner, who, after having it about a month, gave it liberty, which on its part was not abused; for it came to the lure whenever called. It not only allowed itself to be handled any way, but seemed to be gratified by the application of the hand to its legs and plumage. The Eagle was hooded, after the manner of the hunting-hawks, for some time, but the practice was abandoned; and

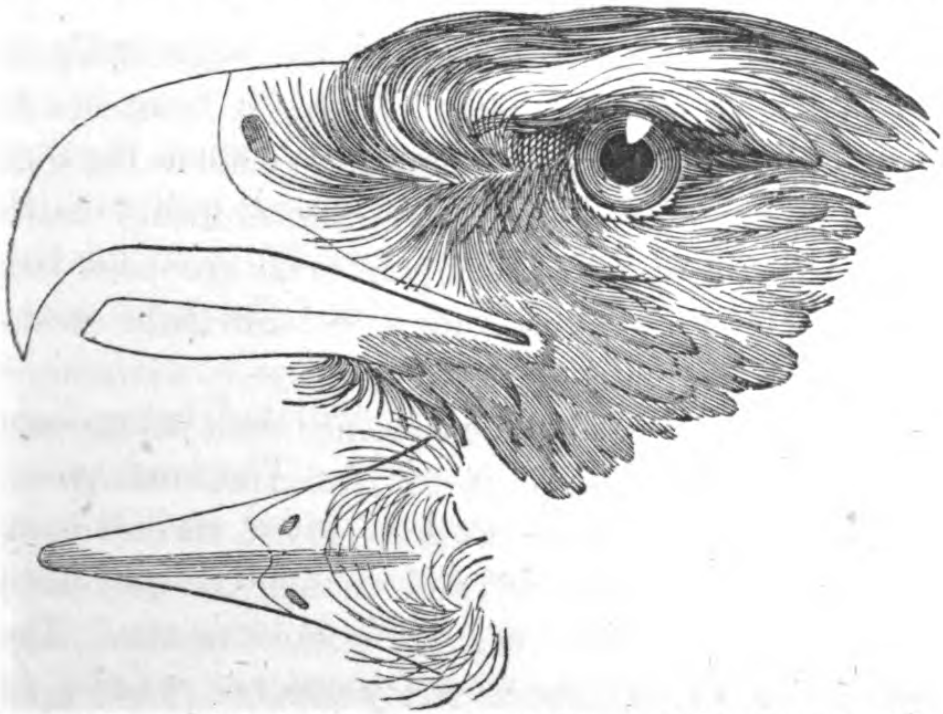
* Ornithological Biography.

although it may be necessary if the bird be trained for the chase, hooding is otherwise not required, as this remained quiet and contented for any length of time, and no matter how far carried on its master's arm. It was quite indifferent to any person's presence, and was unwilling to leave its owner, even to take a flight, having to be thrown into the air whenever he wished it to do so. When the Eagle was at large, he had only to hold out his arm towards it, which as soon as perceived, even at a distance, it flew to and perched on.

There are numerous modifications of form and character in different species of Eagle, adapted to the peculiarities of country and climate wherein they may be placed, as well as to the kind of animals upon which they are destined to prey. The general habits of most of them are but little known to naturalists, who have consequently experienced considerable difficulty in arranging them in a systematic form. Some of them are said to prey upon small reptiles and insects, and even to feed upon vegetable substances; they, moreover, possess the mildness of manners of gallinaceous birds, and others are said to possess more the character of some of the omnivorous perching birds. The beak in certain species is observed to be shorter and more convex above than is usual in Eagles generally, and the tarsi become elongated, and the toes comparatively weak.

Hawks.

THE sub-family *Accipitrinæ*, comprising the Hawks, is an intermediate group between the Eagles and the Falcons. They hunt for their prey upon the wing, but at a small elevation from the ground in comparison with the typical Eagles. They sometimes, like the Falcons, strike their prey in the air, but generally, like the Eagles, upon the ground. They feed on living flesh, that is, such as they have recently deprived of life, and



the beak, which indicates a greater cutting power than that of the Eagle, is the instrument of death instead of the talons. It is in the bill therefore that we must look for the greater development of strength,

and if compactness and solidity be indicative of that quality, the beak of the Hawk has the appearance of greater power, in comparison with its size, than that of the Eagle. The Goshawk's bill, represented in the cut, may be compared with that of the Eagle at page 20. It will be observed that it is short and curved from the base; in the middle of the cutting margin of the upper mandible there is a festoon, or rounded tooth-like projection. The tarsi are lengthened and slender in comparison, and are scutellated, or covered in front with large broad scales; the middle toe is considerably longer than those on the sides; and the claws are strong, very much curved, and sharp pointed. The wings are short and rounded, not extending further, when closed, than to two-thirds of the length of the tail. The fourth quill-feather is generally the longest in the wing. This form of wing is not adapted for long-continued straightforward flight, or for much agility in the air, but accords well with the locality in which these birds usually seek for their prey, where only short flights and frequent ascent and descent are requisite.

Hawks are pretty generally distributed, being found in almost every part of the world. The most powerful species are found in cold latitudes, as is the case with Eagles; but they are not so much birds of the mountain and the free sky as those birds are. They inhabit hilly countries, where there are woods, and their short wings and facility of ascending and descending enable them to find their prey in places where there is no scope for the stoop of an Eagle or the rush of a Falcon.

They are usually divided into two sections—Goshawks and Sparrow-hawks. The former are by much the stronger birds of the two; but they are at the same time heavier, and perhaps not so courageous in proportion to their strength as some of the Sparrow-hawks. The latter inhabit more the lowland countries, though they also are most abundant in wooded districts.

In the days of falconry these short-winged or low-flighted Hawks, were denominated "ignoble hawks," on account of their inferior style of catching their prey, and less splendid action in the air than the long-winged or noble Falcons. Some of them were, however, trained for sport. The Goshawk in particular, which was dignified by the name of "falcon gentle."

In form and habits the Goshawk approaches nearest to the Eagles. In fact, Mr. Swainson observes, that the European Goshawk (*Aster palumbarius*), from its size and strength, might be very easily taken for an Eagle, and the same may be said of the white Goshawk of Australia.

Goshawks prey upon hares, rabbits, pigeons, pheasants, grouse, and partridges, which they can procure with little difficulty, as they are either upon the ground, or but little elevated from its surface; and as the bird has not to descend from any elevation in the air, but approaches its prey, as it were, by stealth, coming upon it sideways or obliquely, its lengthened tarsi are not endangered by the pounce. It flies low, and does not stoop to its prey, says Mr. Yarrell, like the Falcons, but glides in a line after it, and takes it by a mode which in the language of falconry is called

raking. If the game takes refuge in a copse or other shelter it will sometimes follow it, if the cover is not very thick, or sit patiently on a tree or stone till it moves, or till some new game presents itself.

When in search of food, the Goshawk sweeps along the margins of woods and fields, darting at anything either on the ground or on the wing, with great celerity; the long tail, which performs the office of a rudder, assisting the bird materially in its movements. An American species, Audubon says, is extremely expert at catching snipes on the wing.

The male bird of this species is not so large as the female by one-fourth, or sometimes one-third. A full-grown female measures from twenty-three to twenty-four inches in length. The plumage of both sexes in adult birds is nearly similar. The beak is horn colour, or bluish-black; the cere and irides yellow; top of the head, the whole of the back, upper surface of the wings and tail-feathers dark greyish-brown; in females the colour inclines to clover-brown; the upper surface of the tail-feathers barred with darker brown; a band passing over the lore, eyes, cheeks, and ear-coverts, the nape of the neck, throat, breast, belly and thighs nearly white, with spots, transverse bars, and undulating lines of dull black; under tail-coverts white; lore, cheeks, and ear-coverts greyish-brown, forming an elongated patch on the side of the head; the legs and toes yellow; claws black.

Goshawks, varying somewhat in appearance and some minor characters, are extensively distributed over the northern parts of the eastern continent and

of America. In England they are very rarely seen, but they are said to inhabit some of the more wild and solitary districts of Scotland.

A well-known example of the genus *Accipiter* is the common Sparrow-hawk of this country, *A. fringillarius*. The delicacy of its shape and the symmetry of its proportions, combined with the commanding posture that it assumes when perched, and the vigour of its expression, give to this bird some distant resemblance to the smaller Falcon, though in its general habits it is very different.

The Sparrow-hawk, next to the Kestrel, is the most abundant of British birds of prey, inhabiting all the woodland and more cultivated parts of our islands. They are chiefly distinguished from the birds of the preceding genus by their inferior size, and the greater comparative length and smoothness of their tarsi. In habits and mode of living a great similarity exists, and though small, they are equally noted for their courage and audacity. Unlike the Eagles and more noble Falcons, they begin to truss and rend their prey while it is yet quivering beneath their claws, heedless of the pangs that this protracted torture adds to the excruciating pains which the dying bird already suffers. The Falcons, if their prey is not killed by the stroke, instantly kill it outright, by breaking the skull or dislocating the neck, before they begin to eat.

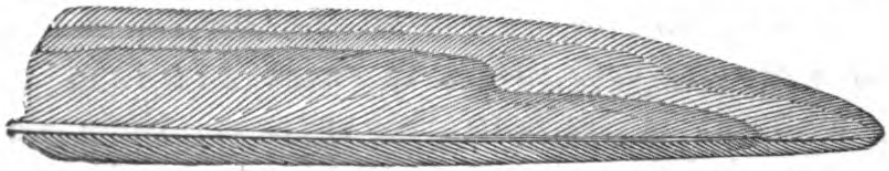
This destructive and well-known species is remarkable for the great difference in size between the male and female, the former seldom measuring twelve inches in length, whilst the latter often exceeds fifteen inches. It is one of the boldest of its genus, and the

female, from her superior size, is a fatal enemy to partridges and other game, as well as pigeons.*

It builds in low trees, or thorn bushes, forming a shallow and flat nest, composed of slender twigs, and very similar to that of the ringdove, but rather larger. It will sometimes take possession of some old deserted nest in a tree, most frequently that of a crow. The eggs are four or five in number, of a pale, bluish-white, blotched and spotted with dark reddish-brown. The young are covered with a delicate and pure white down, and are abundantly supplied with food by their parents.

In the days of falconry the Sparrow-hawk was trained, and much approved in the pursuit of partridges, quails, and many other birds.

The generic characters are—bill curved from the base, compressed; cutting margin of upper mandible with a distinct obtuse lobe or festoon; nostrils oval; wings short, rounded, fourth and fifth feathers



longest; first, with the inner web notched or sinuated; the next four with both webs emarginated; tarsi large and slender, and scutellated in front, with the scales thin and smooth, and closely united to each other; middle toe longer than the outer by one joint, and exceeding the inner by two. Hind and inner toes of equal length and strength, armed with very strong, hooked, and short claws, much longer than those upon the middle and outer toes.

* Selby.

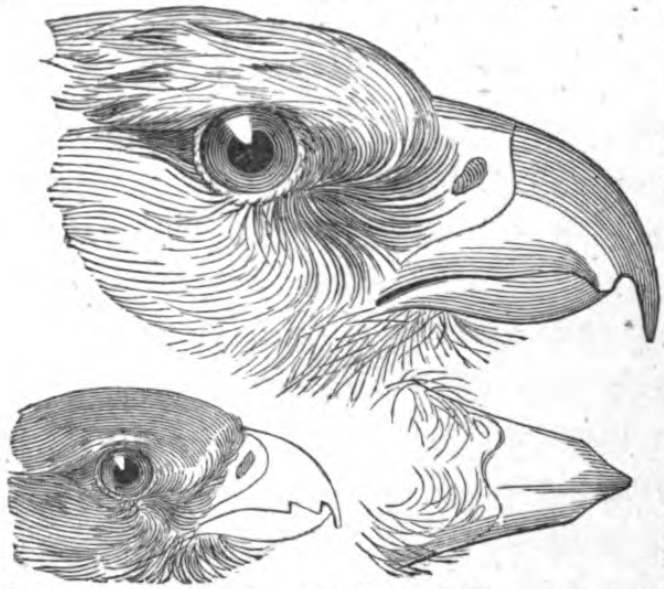
The Peregrine Falcon.

Falcons.

We now enter upon the consideration of the true Falcons, the pre-eminent types of rapacious birds. They are inferior in size to the Eagles and Vultures, but the most courageous and daring in the capture of their prey, considering their size, of all rapacious birds. They possess the most perfect symmetry of form, combined with a noble bearing and a bold resolute character of expression. They strike their prey, which consists principally of birds, in the air, at any height from the ground, and rush upon it with the rapidity and force of an arrow. Elegant in the style of their flight, as powerful in the aerial element to which they are so well adapted, they may be considered in some respects as the most interesting of the order, and indeed of all the feathered race. Their general form is robust yet compact, and their power of flight, from the full development of the wings, is perhaps unequalled for swiftness and durability. From these striking characters, as well as from their docility, and susceptibility of being *reclaimed* (or trained for the purposes of falconry), they have been usually termed the "noble birds of prey," or "noble falcons,"

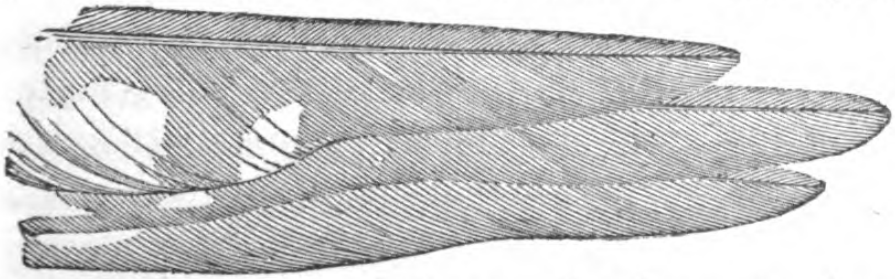
all the others coming under the designation "ignoble."

The peculiar characters of the true Falcons are—the beak curved from its base, short and strong, with an acute, tooth-like process, and sometimes two on each cutting margin of the upper mandible, near the point, and corresponding notches in the lower maxilla; posterior to the tooth is a light festoon. The point of the upper mandible is very sharp and much hooked; that of the lower is truncate, and acts with a grinding motion against the concavity of the hook. In many of the smaller Falcons this toothing is exhibited in a greater degree of development, as they prey upon smaller birds, and have many feathers to pull in order to obtain but a small quantity of food; so that a superior degree of toothing does not bear any relation to the absolute power of the bird. The legs, or tarsi, are rather short, strong, and reticulated; the middle toe exceeds the length of the outer one by a joint, and is united to it by a membrane at their base; the inner toe is shorter than that which is exterior, and is armed, as well as the hinder toe, with a strong claw, exceeding the others in length; the hind toe is short. The toes



are much more slender than those of the Eagle, being used for clutching in the air, instead of on the ground; and the elongation of the middle toe is peculiarly adapted to the nature of the prey; the sharp hooked claws are also evidently suited for prehension and carrying. The points of the claws are prevented from coming in contact with the ground or other foreign hard bodies, when the bird is at rest, by a provision which renders them partially retractile, not indeed in the same manner as those of the cats, among the Mammalia, which have the power of withdrawing or sheathing theirs within the integuments, but by giving the bird of prey the power of elevating them at pleasure. The toes of Falcons often appear cramped when the bird is perched; but this arises in most instances from the careful arrangement of its talons, that their points may not be blunted or injured. The muscles which invest the thigh-bone of the Falcon are remarkably large, and the tendons which communicate with the toes are tough, and of firm texture, so that the birds are enabled to lift and carry through the air, for a long distance, bodies nearly as large as themselves.

In the wings of the true Falcons the second



and third quills are always the longest, though the first is very little inferior to them in length.

One or more of the first quills have the inner web notched, and are remarkably firm in texture. The other quill-feathers are shortened gradually so as to form a pointed wing, which reaches to the extremity of the tail.

Pointed wings, it has been observed, are not so good for straightforward flight in perfectly still air as wings which are broader, and therefore when there is no wind, and the Falcon is in level flight, it always flies obliquely or curving; the same may be also observed in the Swallow tribe, and indeed in all birds which have the wings much pointed. But this form of the wings constitutes, or at least constituted, one of the chief excellences of the Falcons as sporting birds. Such wings are of course not good for mounting the air, unless they have some resistance to contend with, and therefore Falcons "get the sky better" directly against the wind than in any other direction; and as it is the reverse with birds at which Falcons chiefly were flown, this gives the Falcon great advantage in capturing those which are of powerful wing and doubling flight.

Any one who reflects on the matter, Mr. Mudie observes, will readily understand how the wind and the Falcon, by being two forces acting at an angle to each, must produce a resulting motion of the Falcon in the diagonal direction, and upon the well-known principle of the composition of forces, and the resulting force, in mechanics, send the bird much more rapidly and much more directly upwards, than if it had to work its way wholly by the action of the wings. The Falcon thus gains her elevation with comparatively little labour,

and arrives at the same altitude with much less horizontal distance than if she had a side wind, and especially if she went down the wind, which would then carry her horizontally away from the prey, and render it exceedingly difficult for her to gain such a height as that she would return upon it with any impetus, or indeed with any chance of seizing it. This is a beautiful instance of mechanical action and structural adaptation of the Falcon to the wind. When the Falcon has gained her elevation, she turns and remains poised for a few moments, her wings acting the while with great rapidity; and there is little doubt that this action of the wings tends to excite all the energies of the bird to their very utmost, as well as to enable her to take her aim with unerring certainty. The moment that she has by this means gained her excitement and her poise, the rush with which she descends resembles that of the lightning, and, when seen laterally, it absolutely dazzles the eye. In such a case, if the breeze is moderately fresh, and the Falcon powerful, the capture of her prey is certain, be it almost what it may; for she now descends in her oblique but arrowy path by the combined energy of three forces—her own excited action, her gravitation, and the force of the wind. The prey seems to be aware of this, for though it may be a lapwing or a pigeon, or any other bird which is "clever at its feathers," and which has thrown her out at single chase, till she has abandoned that style of pursuit, it screams and appears powerless and vanquished, even while the Falcon is yet so high as to appear no bigger than a lark; and after the scream one can hardly count moments till the prey is struck

to the ground. In the whole action of animals of wild nature in the finding of their food, there is perhaps none equal, in point of style and beauty of mechanical contrivance, and adaptation to this contrivance, as this rush of the Falcon upon the wide moor, where prey and preyer are equally in their element in free nature, and in the full possession and practice of all their resources.*

It was this beauty and strength of flight, combined with their docility, graceful appearance, and courageous demeanour, that brought them, in the days of our ancestors, for a considerable period, into general use for the pursuit and capture of other birds. The art of falconry soon became the pride of the rich, and their chief field amusement. A hawk in the fist was often represented by the painters of those days to indicate the nobility of the person whose form and features were depicted upon the canvas. Various legislative enactments were made for the preservation of the birds, as well as their eggs. So valuable were they considered, when possessed of the various qualities most in request, that in the reign of James I. Sir Thomas Monson is said to have given one thousand pounds for a cast (a couple) of Hawks.

The species of this sub-family are very numerous, and are scattered all over the globe. They have been divided by Cuvier into two sections, the Falcons and the Jer-falcons. The former, it is said, having the beak more completely toothed than the latter; but the latter are the more powerful birds. It is, however,

* British Cyclopædia.

doubtful whether the characters are sufficiently distinct to admit of generic separation.

One of the most esteemed species in the days of falconry was the Jer-falcon (*Falco islandicus*), an inhabitant of the northern portions of Europe and America. On account of their scarcity, very high prices were paid for these birds. Iceland was and is one of their most favourite strongholds. In England they are extremely rare, nor are they less so north of the Tweed, and in Ireland. They frequent the precipitous coasts of Norway and Sweden, and were sometimes known as "Norway Hawks" on that account.

The length of the male bird is about twenty-two inches, and the wings stretch to the extent of about four feet. The female is two or three inches longer, and proportionally greater in the extent of the wings. The beak is powerfully formed, being curved from the base, and of firm texture; the upper mandible is armed with an acute tooth near the point, and there is a corresponding notch in the under mandible, which is truncated at the tip. The colour of the bill is bluish, being darker at the tip, and having the cere bluish-yellow. The tarsi, which together with the toes are yellowish, are feathered on their upper portion, and are shorter and stouter than the corresponding parts in the true Falcons; the wings, too, are somewhat less pointed than in those birds, and they are not so long in comparison. The tail is long, square, and capable of being spread very wide, and of striking upwards or downwards against the air with considerable force. The superiority of wing-power and the strength and capacity of action in the tail give to the Jer-falcon an

advantage over the Eagle, and enable her to strike her prey either in the air or upon the ground, and with the same effect in both cases.

As in most rapacious birds, the general plumage varies considerably in colour and marking, according to the age of the bird. The ground-colour is usually white, with narrow bands of brown on the upper parts and tail, and tear-shaped spots of the same colour upon the under part of the body, interspersed with lines and arrow-point spots, likewise brown. Old birds appear to have the head, all the under parts, and the tail white. The colours on the upper parts of the male bird are at all times darker than those of the female.

The Jer-falcon is said to build annually on the rocky coasts of Norway and Iceland. It seldom appears in the southern parts of the British Islands. Dr. E. Moore, of Plymouth, has recorded a notice of one taken in Devonshire so lately as the year 1834. Dr. Borlase, in his "History of Cornwall," refers to the occurrence of one at Helston. Other specimens have likewise been procured in this country, but its true habitat appears to be in the higher northern latitudes, Norway, Iceland, Greenland, Siberia, Russia, and occasionally the north of Germany; but apparently in no country more plentiful than in North America.

Dr. Richardson, in the "Fauna Boreali-Americana," says, we saw it often during our journeys over the barren grounds, where its habitual prey is the ptarmigan, but where it also destroys plovers, ducks, and geese. When the Jer-falcon pounces down upon a flock of ptarmigan, the latter endeavour to save themselves by diving instantly into the loose snow, and

making their way beneath it to a considerable distance.

One of the most elegant of its genus is the Peregrine Falcon (*Falco peregrinus*), which, on account of its great docility, and the comparative ease with which it was procured, was the most generally used by those who pursued the amusement of hawking. The female Peregrine, being larger than the male, was the Falcon *par excellence*, and being considered more powerful and courageous, was usually flown at herons and ducks; the male Peregrine was called the tercel, tiercel, and tiercelet, and was more frequently flown at partridges, and sometimes at magpies.

The Peregrine is a discursive species, and ranges over all parts of the world, at least of the eastern hemisphere. It frequents high and rocky mountains; and in the breeding season it may be found along our coasts where the cliffs rise to three or four hundred feet. They are very courageous birds, darting suddenly, perpendicularly, and with great rapidity on their prey, which principally consists of partridges, pheasants, quails, wood pigeons, etc., and the smaller quadrupeds. A Peregrine is sometimes to be seen stationed on the top of a hillock, or on a low branch of a tree, on the look-out for game, and when a covey of partridges rises it dashes across them, and endeavours to strike, which it often does with so much force as to kill the birds, and then doubling instantly, seizes it before it reaches the ground, and carries it off to the place of its retreat. It does not, however, scruple to attack the larger species of birds, and sometimes gives battle even to the Kite. Like most predatory ani-

mals, these birds are stimulated to action by the pressure of hunger alone, and remain inactive and almost motionless while the process of digestion is going on, and until the renewed cravings of their appetite stimulate them to further exertions.

The flight of this bird is of astonishing rapidity. It is scarcely ever seen sailing, unless after being disappointed in its attempt to secure the prey which it has been pursuing, and even at such times it merely rises with a broad spiral circuit, to attain a sufficient elevation to enable it to reconnoitre a certain space below. It then emits a cry much resembling that of the Sparrow-hawk, but generally louder, like that of the European Kestrel, and flies off swiftly in quest of plunder. The search is often performed with a flight resembling that of the tame pigeon, until perceiving an object, it redoubles its flappings, and pursues the fugitive with a rapidity scarcely to be conceived. Its turnings, windings, and cuttings through the air are now surprising. It follows and nears the timorous quarry at every turn and back-cutting which the latter attempts. Arrived within a few feet of the prey, the Falcon is seen protruding his powerful legs and talons to their full stretch. His wings are for a moment almost closed; the next instant he grapples the prize, which, if too weighty to be carried off directly, he forces obliquely towards the ground, sometimes a hundred yards from where it was seized, to kill it and devour it on the spot. On the contrary, should it not prove too heavy, the exulting bird carries it off to a sequestered and secure place.*

* Ornithological Biography.

Of all birds at which the Peregrine flies, the Heron appears to be the most difficult to master, and affords the greatest degree of sport. The Heron is a high flyer, and can mount into the air with as much facility as the Falcon, and is instinctively aware that the latter can inflict no material injury as long as he is uppermost in the air, and thus the contest is delayed by the manœuvres of each to gain the sky of each other. And even when the Falcon does get uppermost, the long-pointed bill of the Heron becomes a serviceable instrument of defence, and is thrust out by the muscles of the lengthened neck behind the wing, at the same time that he continues his flight; and should the Falcon be too eager in her pounce, she would stand a chance of being transfixed on the bayonet-like weapon. The difficulty which the Hawk encounters when attacking a bird so formidably armed, made the hawking of that bird a very choice and even a royal sport in the days of hawking; and great pains were taken to preserve Herons for this purpose. As soon as they have gained any advantage over their quarry, the more noble Falcons invariably attack the vital parts, in order to deprive their prey of life and the power of doing mischief as soon as possible. The head and upper part of the neck are first attacked, and the instrument of death, the bill, soon performs its office.

The Peregrine, observes Mr. Audubon, is a cleanly bird in respect to feeding. No sooner is the prey dead than the Falcon turns its belly upwards and begins to pluck it with its bill, which he does very expertly, holding it meantime quite fast in its talons;

and as soon as a portion is cleared of feathers, tears the flesh in large pieces and swallows it with great avidity. If it is a large bird, he leaves the refuse parts; but if small, swallows the whole in pieces. Should he be approached by an enemy, he rises with it and flies off into the interior of the woods, or, if he happens to be in a meadow, to some considerable distance, he being more wary at such times than when he has alighted on a tree.

The whole length of an adult Peregrine Falcon is from fifteen to eighteen inches, depending on the sex and age of the bird. The beak is blue, approaching to black at the point; the cere and eyelids yellow, the irides dark hazel-brown; the top of the head, back of the neck, and upper surface bluish-slate or ash colour, becoming lighter at every succeeding moult—the males usually the most so; the feathers of the back, wing-coverts, and tail barred with a darker tint; the primary wing-feathers brownish-black, the inner webs barred and spotted with rufous-white; the front of the neck white, with dark brown longitudinal lines; the breast rufous-white, with dark brown transverse bars; the flanks, under tail-coverts, and the upper surface of the tail-feathers barred transversely with dark brown and greyish-white; legs and toes yellow; the claws black.

Young Peregrines have the head and upper surface of the body and wing-coverts of a brownish-ash colour, the edge of each feather rufous; the dark longitudinal streaks on the under side of the body more conspicuous, but, gradually shortening and spreading laterally, ultimately change their direction and become

transverse. This change is first observed on the feathers of the belly and the flanks.*

The smallest of the British Falcons is the Merlin (*Falco æsalon*); it is also one of the swiftest on the wing, the boldest in the chase, and the most easily tamed, and therefore, in the days of falconry, it was in especial repute as a lady's Hawk. The weight of the female Merlin is only about six ounces, and the male is not more than five. It is a resident throughout the year in this country. In the breeding season it resorts to the lonely moors, where it constructs its nest in clefts of rocks, heaps of stones, or bushes, according as one or the other may be most convenient. It resorts to these upland haunts about the same time when the summer emigrants, or birds of summer movement, which winter abroad or in the lower and more fertile parts of the country, resort to the same places; and it quits these upland retreats at an advanced period of the season, following the other birds on their migration southward, though it does not appear that it quits the country along with those which winter in more tropical climates. When the Merlin comes to the margins of the uncultivated land, it is one of the severest enemies of the partridge. Its eye is very keen and its motions rapid; and thus it beats the fields with more success than the larger Hawks. Notwithstanding its boldness and power of wing, the Merlin is one of the lowest-flighted Falcons, and when on the cultivated lands, it is generally found skimming over the fields, or along the hedges, very close to the surface; and thus, as its prey is

* Yarrell's British Birds.

always below it, there is comparatively small chance of escape.*

The Merlin makes its scanty nest on the ground, laying four or five eggs, mottled all over with two shades of reddish-brown, and measuring one inch seven lines in length, by one inch three lines in breadth. Temminck says these birds inhabit forests and mountains, building their nests in trees or on shelving rocks.

From its habit of sitting on a bare stone or portion of rock, this species has acquired the name of Stone-falcon. In France it is called *le Rochier*, and in Germany, *Stein Falke*.

The Merlin measures from ten to twelve inches in length, depending on the sex of the specimen. An old male has the beak bluish horn colour, palest at the base, darkest towards the tip, the cere yellow; the irides dark brown; the top of the head blue-grey, with dark lines passing backwards; the cheeks, and from thence round the back of the neck, pale reddish-brown, also marked with dark streaks, forming a collar; the whole of the back and wing-coverts fine blue-grey, the shaft of each feather forming a dark central line; wing-primaries pitch-black; upper surface of the tail-feathers bluish-grey over two-thirds of their length, with slight indications of three dark bands, the distal third nearly uniform black; the tips of all the feathers white; the chin and throat white; breast, belly, thighs, and under tail-coverts rufous, with brown central patches, and darker brown streaks; under surfaces of the tail-feathers barred with shades of grey, a broad

* British Cyclopædia.

dark terminal band, and white tips; legs and toes yellow; claws black.

In the female, the top of the head, back, wing-coverts, and secondaries are dark liver-brown, the shaft of each feather darker, the edge tipped with red; the tail-feathers brown, with five narrow transverse bars of wood-brown; under surface of the body pale brownish-white, with darker brown longitudinal patches; the beak, cere, eyes, legs, toes and claws as in the male. Young males resemble the females; and in birds of the year, the wings do not reach so far towards the end of the tail as in those that are adult.

Some of the smaller species of Falcon have two distinct tooth-like projections on the cutting margin on each side of the upper mandible, giving to the bill a greater facility of trussing the small birds which form their food. This process is seen most distinctly in the bill of *Hierax cœrulescens*, which is an elegant little bird. The Cuckoo Falcon (*Aviceda cuculoïdes*) is such a perfect prototype of the hook-billed Kites of tropical America, says Mr. Swainson, that but for its bill it would be impossible to distinguish the two genera, which both are disguised in the plumage of the cuckoos.

The general form of this remarkable bird, continues the same writer, may be briefly described. It has the long wings of a buzzard, the tips reaching to within two inches and a half of the extremity of the tail; the three first quills are graduated, and slightly sinuated in the middle of the inner web; the tail is broad and quite even; the bill is broad and compressed, having two teeth on each side, situated near the tip; the nostrils are closed, and merely open by a transverse

slit; the tarsus is so short, that it is inferior in length to the middle toe, and is feathered half-way down, the remaining portion being covered with irregularly-shaped somewhat hexagonal scales; the soles of the feet are remarkably broad, and all the three toes are cleft to their base; the outer toe is shorter than the inner one, and is only as long as the hinder, leaving out the measurement of the claws.

The general tint of the upper plumage, including the wings and tail, is of a very dark cinereous, almost approaching on the wings to blackish; the middle of the back, however, and the scapulars are dark brown; the ash colour being more clear in the head and tail. The under plumage from the throat to the breast is of a light ash, which there changes to a cream-coloured white, banded with broad bars of blackish-brown, of which there are two on each feather. The inner shafts of the quills are cinereous-white, those of the primaries only having from five to six remote black bars, most conspicuous on their upper surface; the inner wing-covers are ferruginous, without any markings. The tail has a very broad band of black at its tip, and a few irregular half bars at the base of the outermost feather; cere and feet yellow. Total length about sixteen inches.

Kites.

The species described in the preceding page conducts us to the Kites, which form the sub-family *Milvinæ;* a distinct section of diurnal preyers, both in the appearance and habits of the species.

The generic character of the Cuckoo Kites (*Cymindis cuculoïdes*) are thus described by Mr. Swainson, in his Synopsis. Bill high, the sides much compressed, with the hook considerably lengthened; the cutting margin irregularly sinuated, or nearly straight; under mandible small and weak. Sides of the head and orbits partially naked. Nostrils obliquely transverse, opening by a slit. Tarsi very short, not exceeding the hind toe and claw; the anterior part plumed half-way from the knee. Toes broad, with fleshy margins; the two lateral exactly equal; the middle slightly longer, the hinder slightly shorter, than the inner toe. The claws nearly equal, except the exterior, which is smallest. Soles of the feet very broad, and without prominent pads. Wings long; the fourth quill the longest.

Deprived in a great measure of the daring spirit which characterises the Falcons, the Kite needs not the powerful instruments of capture and destruction which are so highly developed in that genus. The bill is therefore smaller and weaker, in proportion to the size of the bird, than in any of the Hawks or Eagles; the cutting margin is neither toothed nor festooned,

but sinuated, or slightly waved; the tip very acute, and considerably hooked and lengthened. The tarsi are short and slender, and although the birds exceed the Sparrow-hawk in size, they are not nearly so powerful in the foot. The toes are likewise modified in character, and destitute of pads to the soles; but the length of the wings and the forked tail, which give to these birds their peculiar power and gracefulness of flight, are the characters which more particularly separate the Kites from the other rapacious birds.

Kites are not very numerous in species, but they are generally distributed over the world. They feed upon the smallest species of quadrupeds and birds; reptiles and carrion also form a portion of their food.

The Fork-tailed Kite (*Milvus ictinus*) is the only species of this sub-family that is found in Britain, or indeed in Europe. It is readily distinguished from the other *Falconidæ*, even when at a distance on the wing, by its long and forked tail. The flight of this species is singularly graceful and easy; gliding smoothly along with little muscular exertion, and by no means swift, it appears to float in the air without the slightest effort. It still retains in some districts the name of Gleg or Glead, derived, according to Pennant, from the Saxon *glida*. But though the Kite moves with such freedom in the air it does not prey upon any sort of creature there. It feeds on the ground, and chiefly upon the young of the most timid animals and birds. Moles, mice, frogs, insects, worms, and snails are items in its bill of fare; and no kind of carrion comes amiss to it when pressed by hunger. Like the Sparrow-hawk, it frequently visits the poultry-yard, but is often

deterred from its purpose by the vociferations and show of resistance of the hens, which are courageous in defence of their broods.

The Kite chiefly inhabits wooded districts, near hills or open downs, but frequently changes its abode in the winter. It is not known, however, that they wholly quit the country. It makes a nest early in the spring, in a fork of some large tree, of twigs and sticks wattled together, and lined with wool and any other soft materials. The eggs are generally three, rarely four; rather larger than those of a hen, dirty white, with a few rusty spots at the larger end, sometimes quite plain; weight nearly two ounces.

The general colour of the Kite is reddish-brown, lighter on the head, which inclines to grey, and under parts, each feather having a central longitudinal streak of dark brown; the cere, tarsi, and toes yellow, the bill horn colour, and the claws black.

One of the most elegant examples of this sub-family is the Swallow-tailed Kite of America (*Nauclerus furcatus*). It is a native of the southern states of North America, extending into Mexico, migrating southward from colder districts, and never seen farther to the east than Pennsylvania. The chief peculiarity of this bird is its swallow-like mode of catching insects upon the wing. In calm and warm weather they soar aloft, pursuing the large insects called mosquito-hawks, performing the most singular evolutions, and using their tail with singular elegance of motion. Their flight is remarkably easy, graceful, and buoyant. Their principal food consists of snakes, lizards, and small reptiles, caterpillars, grasshoppers, and large insects. Audubon

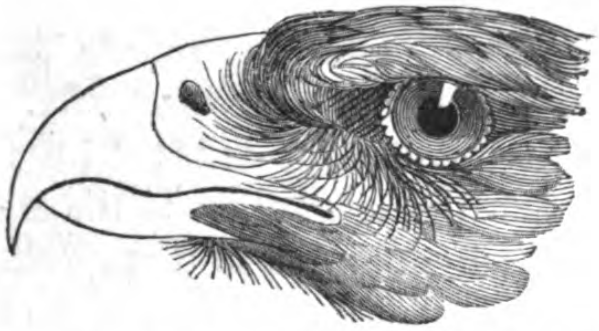
says that in pursuit of these they never alight, but clutch them up with an easy stoop and without any apparent exertion, and devour them in the air. At other times they may be seen snatching, from the trunks or exposed branches of trees, a species of *cicada* or locust, which swarm among the woods, and likewise a species of lizard, remarkable for the rapid changes of its brilliant colours.

The bill of this species is small, but the upper mandible is considerably curved at the point; it is bluish-black above, light blue on the cere, and the edges of both mandibles. Edges of the eyelids light blue; irides dark. Feet light greenish-blue; claws flesh-coloured. The head, neck, breast, belly, under surface of the wings, sides of the body, thighs, and under tail-coverts pure white; the back, wing-primaries, secondaries, upper tail-coverts, and tail-feathers black, with a purplish metallic lustre; the tertials black on the outer webs, but patched with pure white on the inner; tail very deeply forked. The length of the bird appears to be from twenty-three to twenty-six inches, and the extent of the wings about fifty-one and a half.

The Common Buzzard.

Buzzards.

In the sub-family *Buteonæ*, or Buzzards, we observe a great diminution of the raptorial power, daring spirit, and firmness of plumage, so characteristic of the more noble birds of prey. We no longer find the fearless steady gaze of the Falcon, or the stern glance of the Eagle, conscious of his own might; the symmetry of form, or the mail-like texture of the plumage. The bill is much less powerful, having a more lengthened form than that of the Falcon or Hawk, and the depth from the ridge to the cutting margin at the nostrils is considerably less. It is broad at the base, flatly convex above, and much compressed towards the tip, which forms a rather slender acute hook. There is a conspicuous obtuse lobe on the cutting margin, anterior to the nostrils, which project a little. The lower mandible is obliquely truncated. The claws are short, and less hooked than those of the preceding birds of this family, and their whole frame is loose, and apparently feeble.



On the confines of this sub-family may be placed one of those singular combinations of apparently heterogeneous characters which are occasionally found

in the animal kingdom. The Secretary bird (*Gypogeranus serpentarius*) is one of those forms which has perplexed the systematist, and has consequently been assigned to different orders or families, according to the opinions of different naturalists. It has been referred to the gallinaceous order by one, to the grallatorial by another; it has been arranged with the vultures and the eagles. Cuvier has placed it at the end of his genus *Falco;* its hooked and cleft bill, its projecting eyelids, and all its anatomical details, he observes, indicate its relation to that order. Mr. Swainson, in the first volume of his "Classification of Birds," considers it as the grallatorial type of the vultures; but in his "Synopsis," subsequently published, it is arranged with the eagles. It is evidently an aberrant form, and its habits, the form of its bill, and other characters, seem to indicate its near affinity to the birds of the present sub-family.

In the Swallow-tailed Kite the raptorial form is modified in adaptation to the exclusively aerial habits of preying peculiar to that species; in the present bird the raptorial characters are modified in adaptation to its terrestrial habits. The one captures reptiles by pouncing upon them with its talons, whilst upon the wing; the other strikes them upon the ground with its powerful feet.

The principal generic characters of the Secretary consist, according to Mr. Bennett, in the form of his beak, which is shorter than the head, thick, and curved nearly from the very base, where it is covered with a cere; in the long and unequal feathers, which take their origin from the back of his head, and are

susceptible of elevation and depression; in the naked skin which surrounds his eye, and which is shaded by a series of hairs, in the form of an eyebrow; in the great length and slenderness of his tarsi; and in the shortness of his toes, which are terminated by blunted talons, of little comparative size or curvature. The only known species measures upwards of three feet in length. Its plumage, when in a perfect state, is for the most part of a bluish-grey, with a shade of reddish-brown on the wings, the large quill-feathers of which are black. The throat and breast are nearly white, and the rest of the under surface of the body offers a mixture of black, and red, and white, the plumage of the legs being of a bright black, intermingled with scarcely perceptible brownish rays. The plumes of the crest which ornaments the back of the head, and from the supposed resemblance of which to the pens frequently stuck behind the ears of clerks and other writers the name of Secretary was given to the bird, are destitute of barbs at the base, but spread out as they advance, and are coloured with a mixture of black and grey.*

These birds are natives of the south of Africa, where on dry open grounds they destroy vast numbers of noxious reptiles and insects. A lengthened tarsus is given them to course over the ground with speed, to pass quickly over soft yielding sand, or through tangled brushwood, where their prey lies concealed. This length of tarsus also secures the body, in a great measure, from the venomous bite of serpents, which sometimes form their prey; the wings are also thus

* Tower Menagerie.

enabled to act with freedom, and serve as instruments of attack as well as of defence. Though the legs are long they are remarkably powerful, and capable of striking the prey with great force on the ground. When one of these birds meets with a serpent capable of offering strong resistance, he flies off with his prey in his beak to a considerable height, and then dropping it, follows it in its descent with wonderful rapidity, so as to be ready to strike it when it falls stunned to the ground. He also strikes it with his wings, which are rendered more effective by each being armed with three rounded bony projections. The reptile lies, at length, wearied out and crippled; the work of destruction is completed by laying open the skull with the beak.

The Secretary is not of a wild disposition, and has won universal good-will by its continuous exterminating war against noxious reptiles. They are numerous near the Cape, where they are tamed inmates of the poultry-yard, and render good service in destroying snakes and rats, which are too apt to intrude into their precincts.

In its wild state, when pursued, the Secretary trusts rather to its speed of foot than to its wings, and it is rare that the hunter can approach near enough to get a successful shot at the bird. They live in pairs, building their nest on the top of some small tree.

Of the Buzzards (*Buteo*) there are few species natives of this country. The Common Buzzard (*Buteo vulgaris*) may be met with not unfrequently about the more cultivated plains and woodlands, frequenting

places where there is much old timber, or the wide tracts which are called forests. In Scotland it resorts to wooded uplands, breeding on the edges of ravines, with which they are intersected. It is said to be indolent and cowardly. Bulky in appearance, and rather slow in flight, Mr. Yarrell observes, the Buzzard remains for hours watching from the same tree, preferring apparently the casual approach of an animal that may serve for a meal, rather than find it by a laborious search. Though occasionally seen soaring in the air in circles, it is much more frequently stationed on a tree, from which, if approached, it bustles out with a confused and hurried flight, indicative of fear. As the places which the Buzzard frequents generally abound in game, it has less need of exertion to procure its food than any other of the diurnal birds of prey. It is, says Mr. Mudie, the only diurnal rapacious bird that preys in the thick of the forests, and on the ground in them; and though, when we compare it with those hawks which drive through the air, or beat the bushes on the waste, it seems an indolent creature, yet vigilance is its habit, and the only one that is well adapted to the places which it frequents. To beat a forest of tall trees by flying over it would answer very little purpose, and to beat through the branches would be impossible for a day bird, that depended on the light of the sun. The habit of the Buzzard therefore, though different from that of any of the other diurnal birds of prey, is just as finely adapted to the places which it frequents as that of any of the others; and the Peregrine, for all its speed, and the Harrier, for all its diligence, would

find but a small supply in those places where the Buzzard fares abundantly.

The Buzzard makes a nest in the fork of a tree, and lines it with wool, hair, and other substances; sometimes it takes possession of a deserted crow's nest. The eggs are two, and not unfrequently three in number, rather larger than those of a hen, of a dirty white, generally spotted with rust-colour, chiefly at the larger end.

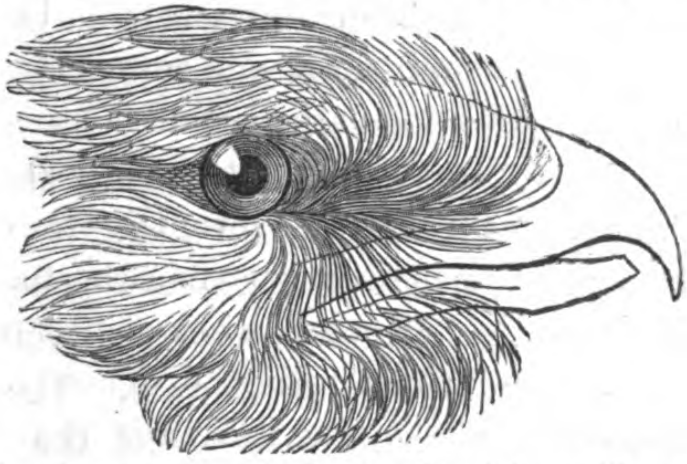
Buzzards vary in colour, but the prevailing tints are rich brown, edged with yellowish-brown on the upper part, white on the throat, and yellowish-white on the belly, the former marked with streaks, and the latter with arrow points and spots of brown; the quill and tail feathers barred with blackish-brown.

The whole length of the bird is from twenty to twenty-two inches, depending on the sex, the females being generally the largest. The tarsi are short and strong, covered anteriorly with feathers for about an inch below the joint, naked their whole length posteriorly; scaled both behind and before; the sides reticulated with smaller scales. The toes are short, the middle and outer one connected by a short membrane. The toes are partially scaled; claws strong; wings ample; the first quill-feather short, about equal in length to the seventh; the third and fourth are conspicuously larger than the rest; the first four feathers with the inner webs deeply notched.

Harriers, which form the genus *Circus*, are distinguished from the true Buzzards by the more elongated and slender form of their bodies, their lengthened, taper, and naked legs, the still greater softness of

their plumage, and by the circular disk of short feathers which surrounds the face. In these two last points the Harriers exhibit an obvious resemblance to the owls, and the affinity, on comparing the skeleton of each, is decided.

Independent of the slender body and very long members, under which, Mr. Swainson observes, we include both the wings, feet, and tail, Harriers may be readily known by their large ears, partially surrounded by a ruff of short and rather stiff feathers, which form a semicircle round the outer portion of the head on each side, and which meet under the chin. The bill is comparatively small, unusually elevated at the base, but very narrow and feeble towards its outward half. Now these two characters, unknown in any other falconine group, are precisely those which are prevalent among the owls, and thus unite those nocturnal birds to the hawks and falcons. The tip of the bill is lengthened and very acute, while the festoon of the upper mandible is either entirely wanting or is so faintly indicated that it can hardly be perceived. The legs of these birds are remarkably long, and more resemble those of the sparrow-hawk than of any other group. The hind toe is peculiarly short, conspicuously shorter than either of the two lateral ones, and the claw occupies one-half of



the total length. The feet and claws are smaller and more feeble than those of the hawks or buzzards. The third quill-feather is the longest in the wing of these birds, and the tail is rounded.

Of the habits to which such modification of form is adapted, those of the Hen Harrier *(Circus cyaneus)* may be adduced as an example. These birds, says Mr. Yarrell, inhabit flat marshy situations, fens, low moors, and commons partially covered with furze and short bushes. They feed indiscriminately on small mammalia, birds, and reptiles. They are considered to be particularly destructive to the young of gallinaceous birds. Their flight, performed apparently without much labour, is easy and buoyant, but not rapid, and generally within a few feet of the ground, which they appear to examine with great care, making close and diligent search for any object of food, and have courage and strength sufficient to pounce upon and kill a partridge, a red grouse, or even a pheasant. *

The sexes in this species differ so much, both in size and in plumage, that they have often been described as different birds. Even in the same sex the colours are not a little perplexing, as they vary with age, situation, and season.

The full-grown hen Harrier is about twenty inches long and three feet and a half in the extent of the wings. The naked parts are yellow, and the irides dark brown. Brown and dusky white are the prevailing colours of the whole bird. The head is mottled brown on the upper part, and the concha round the eye is brown, immediately surrounding that organ, but

* History of British Birds.

terminates in a white eyebrow, which reaches to the cere of the beak, and it is white below, but terminates in a brown border. That appendage gives enforcement and expression to the eye, perfectly distinct from any other of the tribe. The feathers below are brown, with pale margins, and pass into white at the tail-coverts; the upper part is brown, lightest on the scapulars and lesser coverts, and the margins of the feathers are lighter. The tail is brown, with dusky bars, and the quills of the wings very deep brown, inclining to black.

In the male, the breast, head, and all the under part are of a fine grey, lighter in those parts of the concha which are white in the female, and also where the brown is lighter in the upper part of that bird. The remainder of the under part is white, with very faint markings, indeed all the markings in the male bird are obscure and faint; but notwithstanding that, and the difference of size and expression of the eyes (the irides are yellow in the male and brown in the female), the shape and air of the birds correspond exactly.*

* Mudie's Feathered Tribes.

Owls.

Appointed to keep in check the too rapid increase of those small quadrupeds which only come abroad at night, the nocturnal birds, which now claim our notice, require a modification of structure and character different to those which distinguish the birds which feed by day. A peculiar power of sight is requisite to enable the night bird to find its prey, and as it must fly near the ground, a different kind of plumage is needed in order that the flapping of its wings upon the air should not betray its presence to the timid and wary prey. A keener sense of hearing is likewise given to these birds, enabling them to determine the exact locality of their prey. The colours of the plumage, says Sir William Jardine, exhibit a union of tints best suited for concealment; nothing marked or obtrusive, no bright or gaudy plumes which might quickly catch the eye of an otherwise unwarned prey, but a chaste and harmonious blending of the more sombre hues, mixing as a whole into a neutral tint, but showing on close inspection the most minute and delicate of nature's pencillings.

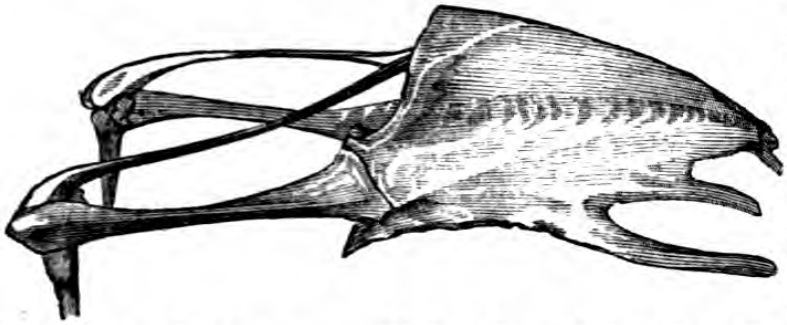
The general figure of the Owl is well known; but although in its plumage it looks a stout, plump bird, yet stripped of feathers, the apparent bulk is reduced to a mere nothing, a small mass of skin and bone. The whole plumage is soft and downy; and the pecu-

The Eagle Owl.

liar construction of the wing-feathers renders the flight noiseless. The wings of the Goatsuckers *(Caprimulgidæ)*, Mr. Swainson observes, alone of all other birds exhibit a similar conformation. In both these, the tips of the external barbs of the outermost quill-feathers, instead of lying flat upon each other, in the ordinary way, are detached and curved outwards, so as to resemble the teeth of a fine saw; hence it follows that when the air is beaten by wings so formed, there is no reverberation. The opposite extreme of this structure is seen in the gallinaceous birds, where the external barbs are very stiff and pressed close upon each other; this formation of wing causes the air to be suddenly and abruptly expelled from beneath it, and occasions that loud whirring noise, often startling to the unprepared pedestrian, with which the partridge ascends from the ground, and seeks safety in flight. The whole structure of the wings of the Owl is evidently intended to promote a noiseless flight: the quills are unusually broad, while the barbs no less than the general plumage are remarkably soft and lax, in order to permit a free escape of the air in all directions. That these circumstances, however, should not diminish the powers of flight too much, the wings are generally rather long, and the four outer quills have that abrupt sinuosity in their inner webs which is so universal among the swift-flying falcons.

Some conception, however, of the diminished powers of flight possessed by the Owls may be obtained by comparing the sternum of the Tawny Owl, here represented, with that of the Peregrine Falcon. The bones of the Owl, it will be observed, are deficient

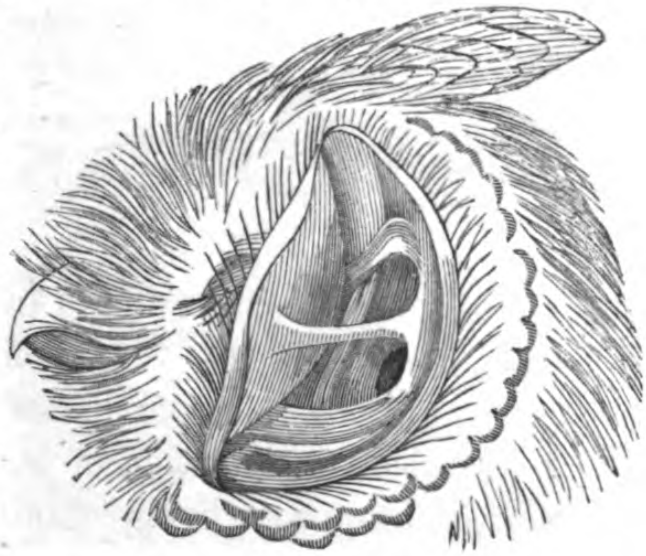
in surface and strength. The keel has but little depth, the sides are narrow, while the forked bone which in falcons is circular,



broad, and strong, will be found in the Owl to be angular, slender, and weak. The deficiency of bone observable in the posterior portion of the sternum of the Owl is likewise an indication of weakness in the wing. Sufficient wing-power being obtained by this formation, a further development of bone was not requisite.

An extraordinary power of vision is necessary to enable these birds to distinguish clearly the objects on which they prey in the dusky gloom that prevails after sunset; and "here," to use the words of Mr. Swainson, "we trace, in a beautiful and wonderful instance, 'the wisdom of God in creation.' The eyes, in the first place, are of an enormous size; but as if this were not sufficient, they are surrounded with two large concave disks—generally composed of white and shining feathers—for the purpose of concentrating a greater extent of light to be reflected upon the eye, which is placed in the centre." The irides of the eyes of Owls have a remarkable sensibility to light, owing probably to their destined habit of living constantly in a half light, and shunning the noonday sun. If exposed to the glare of day, most of the species seem to be powerfully affected by it, and the eyes are either

closed entirely, or defended by an internal lid, which is brought down with ease and rapidity.

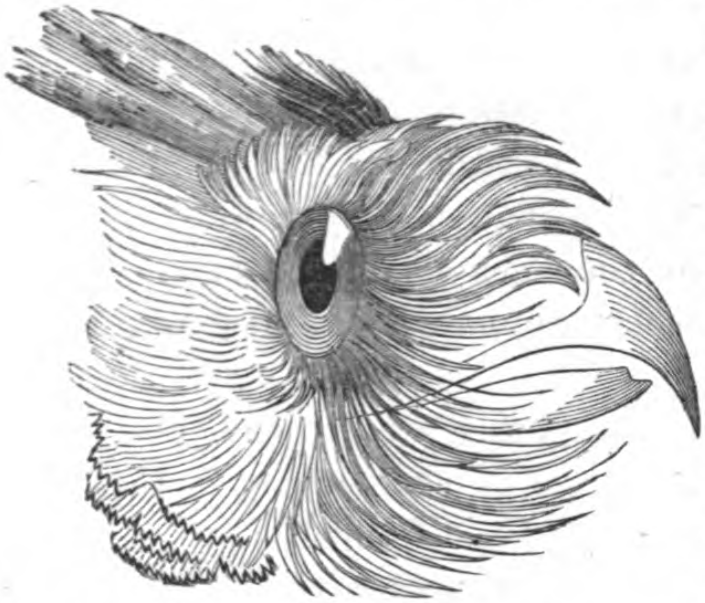


The power of hearing in Owls is perhaps as great as that possessed by any other bird. The auditory opening in the typical species is very large, and covered by an operculum, which is elevated or closed at pleasure. The margin of the operculum is formed of a dense row of short feathers, having flattened quills, which are covered by the posterior margin of the concha when the operculum is closed. To enable the Owl to perceive more distinctly any sound that may indicate a prey, the bony structure of the ear is produced further out above than it is below; and as the prey is on the ground the auditory canal is directed downwards and forwards.

The large size of the head of these birds in comparison with that of the body is well known, and is principally caused by the presence of several large cavities, which communicate internally with the ears.

The bill of the Owl, as well as its hooked and pointed talons, indicate the predacious habit of the bird. The bill is curved generally from the base, but it is much more slender than in the diurnal birds of prey. The cere in some species is large, and completely concealed by the thick ruff of bristly feathers that

project forward from its base, in others it is altogether wanting. The gape is extensive; the neck short and thick. The tarsi are in general short, and more slender than those of diurnal preyers, but the muscles of the leg are well formed, and often well protected by feathers and hairs. The toes are armed with strongly curved and acute talons, which are retractile to an extreme degree; the outer toe is capable of being directed forwards or backwards.



The species vary greatly in size, and, according to their several powers, their food consists of mammalia, birds, reptiles, and occasionally fishes; while, among the smaller species of Owls, twilight-flying beetles and large moths are objects of search. Owls, like the Falcons, return by the mouth the indigestible parts of the food swallowed, in the form of elongated pellets, which are found in considerable numbers about the usual haunts of the birds. Their head-quarters appear to be in the northerly and cold climates. Such as are found in tropical countries are not so bold as the northern races, and do not exhibit the characters of the raptorial species.

Although in general nocturnal or crepuscular

feeders, there are Owls which can see in the daytime, and they take their prey; but the embarrassment of a night bird is ludicrous when driven from his retreat, for when he ventures abroad in the daytime, he is followed and tormented by a host of small birds, which seem aware of his disadvantage, but do not dare to attack him; they tease and worry the poor blind bird until he leaves their neighbourhood, or finds some friendly retreat where he may be screened from their view.

Inoffensive as these birds are to man, they have been regarded as objects of superstition by the ignorant of various countries, and from the earliest times. They have been considered as birds of darkness and ill omen, and by some as messengers of death. On the other hand, the Athenians made them sacred to their patron goddess, and symbolical of wisdom.

Owls are interesting birds, and the sounds which they utter, says Mr. Mudie, though deep and monotonous, have music for a well-tuned ear; the part which they act in creation is moreover an important one; and from the number of vermin which they destroy, there are few birds more worthy of protection.

The Owls are a numerous family. In Great Britain the number is limited to six or seven species, and some of these, being only occasional visitors, are rarely met with. The formation of the ear, the eye, and the facial disk are the peculiar distinctions of this family, Mr. Swainson observes, and it follows that the different primary groups will repose upon the greater or less development and modification of these organs. The nakedness of the tarsi, length of tail, and di-

minished proportions of the feathery disk around the eyes point out the Canadian and Hawk Owls as the aberrant groups.

The Hawk Owl (*Surnia funerea*) is one of the most diurnal of all the Owls. It is bold and active on the wing, and in the smallness of its head, the narrowness of its feet, produced tail, and daring habit, its similarity to the hawks is apparent, though the feet and the feathery disk around the eye indicate the family to which it does belong. The general plumage, particularly of the wings, differs much from that of Owls in general. In them the exterior margins of the quills, as already observed, are edged with a fringe of fine flexible hairs, which allows the wing to beat the air without causiug much noise, but it impedes the flight of course. The present species has not this marginal fringe, and therefore its flight is firmer, but more noisy. It is thus enabled to dash upon its prey and seize it on the wing, which the more downy-winged Owls never attempt to do. It is an inhabitant of North America, Denmark, Norway, Sweden, and other parts of the north of Europe. In the summer season it feeds principally upon mice and insects; but in the snow-clad regions which it frequents in winter, Dr. Richardson observes, neither of them are to be procured, and it then preys mostly on ptarmigan. When the hunters are shooting grouse, this bird is occasionally attracted by the report of the gun, and is bold enough, on a bird being killed, to pounce down upon it, though it may be unable from its size to carry it off.*

* Fauna Boreali-Americana.

Wilson describes this bird as it appears in the northern parts of the United States as follows:—The male of the species is fifteen inches long; the bill orange-yellow, and almost hid among the feathers; plumage of the chin curving up over the under mandible; eyes bright orange; head small; face narrow, and with very little concavity; cheeks white; crown and hind head dusky black, thickly marked with round spots of white; sides of the neck marked with a large curving streak of brown-black, with another a little behind it of a triangular form; back, scapulars, rump, and tail-coverts brown-olive, thickly speckled with broad spots of white; the tail extends three inches beyond the tips of the wings, is of a brown-olive colour, and crossed with six or seven narrow bars of white, rounded at the end, and also tipped with white; the breast and chin are marked with a large spot of brown-olive; upper part of the breast light; lower and all the parts below elegantly barred with dark brown and white; legs and feet covered to and below the claws with long whitish plumage, slightly yellow, and barred with fine lines of olive; claws horn colour. The weight twelve ounces.

The female is much darker above; the quills nearly black; and the upper part of the breast is blotched with deep blackish-brown.

The Snowy Owl (*Noctua nyctea*) is another example of the day-feeding Owls, distinguished principally from the other Owls by the absence of tufts on the head, the small size of the ears, and the diminished extent of the disk of feathers surrounding the eyes. It is one of the most remarkable species of the group,

and receives its name from the snowy whiteness of its plumage, which is only interrupted on the head and neck by a few minute dots of dull brown, and on the rest of the body by regular transverse semilunar streaks of the same colour, but narrower and lighter on the under than on the upper side. These streaks do not extend to the legs, which are covered down to the claws by long, thick, shaggy, hair-like feathers. The whole of the plumage is soft, close, and thick, affording a most effectual protection against the severities of weather, to which this bird is constantly exposed in the Arctic regions which it inhabits. Even the beak is almost entirely buried in the disks of the eyes, which advance internally to a much greater extent than on the outer side. The head is small; the iris of a bright golden yellow; the tail short, scarcely extending beyond the wings; and the bill and claws strongly curved, and of a deep black. In the female the spots and bars are darker and more numerous, and never disappear to so great an extent as in the male, which sometimes in advanced age becomes almost purely white. The full-grown female, which is rather larger than the male, measures two feet in length, and more than five in the expanse of the wings; and is consequently by far the largest Owl, without tufts of feathers upon its head, with which we are acquainted. Its weight, however, according to Hearne, seldom exceeds from three to four pounds.

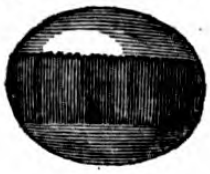
This species is found in the north of Asia, in the north of Europe, and in the north of America. It feeds almost indiscriminately on birds, quadrupeds, fishes, and even carrion. Wilson describes it as being

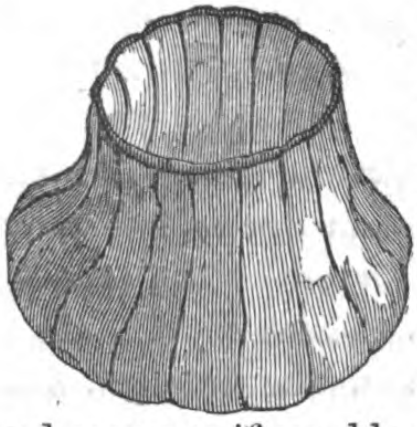
particularly fond of frequenting the shores and banks of shallow rivers, sailing slowly over the surface, or sitting on a rock a little raised above the water, watching for fish, which it seizes with a sudden and instantaneous stroke of the foot, seldom missing its aim. It is capable of swallowing entire animals of considerable size, such as grouse and partridges, young hares and rabbits. Mr. Bullock mentions an instance that came within his knowledge, in which a wounded individual disgorged a young rabbit whole. They breed upon the barren grounds; and never migrate in search of a more temperate climate, but brave the coldest winters. Their voice is so dismal, that, as Pennant observes, it adds horror even to a Greenland winter.

This great northern hunter, observes Wilson, inhabits the coldest and most dreary regions of the northern hemisphere on both continents. The forlorn mountains of Greenland, covered with eternal ice and snows, where for nearly half the year the silence of death and desolation might almost be expected to reign, furnish food and shelter to this hardy adventurer, whence he is only driven by the extreme severity of the weather towards the sea-shore. He is found in Lapland, Norway, and the country near Hudson's Bay, during the whole year; is said to be common in Siberia, and numerous in Kamschatka. He is often seen in Canada, and the northern districts of the United States, and sometimes extends his visits to the borders of Florida. Nature, ever provident, has so effectually secured this bird from the attacks of cold, that not even a point is left exposed. The bill is almost completely hid among a mass of

feathers that cover the face; the legs are clothed with such an exuberance of long, thick, hair-like plumage, as to appear nearly as large as those of a middle-sized dog, nothing being visible but the claws, which are large, black, much hooked, and extremely sharp. The whole plumage below the surface is of the most exquisitely soft, warm, and elastic kind, and so closely matted together as to make it a difficult matter to penetrate to the skin.

The conformation of the eye of this bird, says the same excellent ornithologist, forms a curious and interesting subject to the young naturalist. The globe





of the eye is immovably fixed in its socket by a strong, elastic, hard, cartilaginous case, in form of a truncated cone; this case, being closely covered with a skin, appears at first to be of one continued piece; but, on removing the exterior membrane, it is found to be formed of fifteen pieces, placed like the staves of a cask, overlapping a little at the base or narrow ends, and seems as if capable of being enlarged or contracted, perhaps by the muscular membrane with which they are encased. The eye being thus fixed, these birds as they view different objects are always obliged to turn the head; and nature has so exactly adapted their neck to this purpose, that they can with ease turn it round, without moving the body, in almost a complete circle.

Horned or Tufted Owls, are distinguished from others of the family by a tuft of feathers, called ears or egrets, on each side of the head above the eye, which the bird can erect or depress at pleasure. The Eagle Owl (*Bubo maximus)* is a noble example, and is one of the largest species. The facial disk is large, but more or less imperfect above the eyes. The bill is strongly inclined from the very base; nostrils large, oblique, and concealed; auditory openings oval, of moderate size, extending about half across the cranium, and covered by the outer disks, and are without an operculum. It is nearly two feet in length from the beak to the tail, and measures no less than five in the expanse of its wings. The head and upper parts are variegated with a mixture of blackish-brown, and reddish-fawn colour, the long plumes on the head being nearly black, the stiff feathers of the base of the beak whitish, with black tips, and those of the face varied with black, reddish, and grey. The throat is nearly white, and the ground-colour of the breast and abdomen fawn colour, with numerous broad, black, longitudinal blotches, and slight, narrow, transverse, longitudinal bars. This transversed marking, but with the brown bands still narrower, extends to the inferior tail-coverts, and the feathers of the legs. The beak and claws are black, and the iris of a bright orange.

This bird is a resident in the northern parts of Europe generally, and it is likewise met with in America, or a species so much resembling that of Europe in size, colour, and habits, that the same description will serve for both. It appears to be most

abundant in Russia, Germany, and Switzerland, but is rarely seen in France or England. It frequents clefts of rocks, or old buildings, in the mountains, and is rarely seen in the plains. It preys most in the dusk, but at times flies abroad in the daylight and during the night, and feeds on mice, rats, moles, young rabbits, hares, and fawns, besides grouse and other game. Wilson thus describes the habits of the American species. This noted and formidable Owl is found in almost every quarter of the United States. His favourite residence, however, is in the dark solitudes of damp swamps, covered with a growth of gigantic timber; and here, as soon as evening draws on, and mankind retire to rest, he sends forth such sounds as seem scarcely to belong to this world, startling the solitary pilgrim as he slumbers by his forest fire,

"Making night hideous."

Among the mountainous shores of the Ohio, and among the deep forests of Indiana, alone, and reposing in the woods, this ghostly watchman has frequently warned me of the approach of morning, and amused me with his singular exclamations—sometimes sweeping down and around my fire, uttering a loud and sudden Waugh O! waugh O! sufficient to have alarmed a whole garrison. He has other nocturnal solos, no less melodious, one of which very much resembles the half-suppressed screams of a person suffocating or throttled, and cannot fail of being extremely entertaining to a lonely benighted traveller in the midst of an Indian wilderness.

In Europe the Eagle Owls construct large nests in lofty trees or on rocks. The eggs, which are seldom more than two in number, are of a short oval shape, two inches five lines long, by one inch ten lines wide, and perfectly white.

It has not been correctly ascertained what purpose the tufts or egrets that adorn the head of these birds answer. It is highly probable, Mr. Swainson remarks, that they are given to the Owls for some specific purpose connected with a very refined sense of hearing, more than for a mere ornament, because the females possess these egrets as well as the males; and even when these birds are at rest, these egrets are more or less erect, as if to assist the ear in catching the slightest noise. In their shape, no less than in their position, the egrets of the Owls are analogous to the external ears of quadrupeds; the outer surface being convex, and the inner concave. In the typical Owls, which have no egrets, the ear is very large, and protected by a lid or operculum. Where the egrets are very large, the size of the ear is reduced nearly one-half, and has no operculum, so that by a balance of powers the faculty is probably equalized. The diurnal Owls, whose eyesight does away with the necessity of acute hearing, have small ears and no egrets. This equalization of faculties, in short, is one of the most beautiful laws of the creation.*

The common White Barn Owl, (*Strix flammea*) is a familiar example of the typical form. The head is large; the facial disk large and complete; the

* Nat. Hist. and Classification of Birds.

ears are large, and furnished in front with a broad membranous operculum. It has no tufts or egrets. The wings of this species are long and ample, extending, when closed, two inches beyond the tips of the tail-feathers; the edges of the wing and tail-feathers have the appearance of being worn, the fibres forming the web being of unequal length, and the wings therefore, when beating the air, make very little or no noise; an obvious advantage to the birds, when it is considered that they generally feed on so nimble and wary an animal as a mouse. The tarsi are long, and covered with short, white, hair-like feathers, a few of which are spread over the upper surface of the toes; the claws, which are brown, are rather slender, the inner edge of that of the middle toe is slightly serrated. The whole length of the bird is fourteen inches. In an old male the beak is almost white; irides bluish-black; facial disk stained with rust colour at the inner and lower part of each eye; the margin of the disk defined by the white feathers being tipped with brown; top of the head and neck very pale buff, thinly spotted with black and white; back and wings darker buff, speckled with grey, and spotted with black and white; upper surface of tail-feathers pale buff, with five transverse grey bars; all the under parts pure white.

The White Owl takes up its abode in the immediate neighbourhood of man, in his barns and outhouses, where his presence is of essential service, as he preys upon those pilfering little quadrupeds which commit such havoc in the farmer's stores. The fecundity of these pests is well known, and, as

if to counteract their speedy increase, a pair of these Owls will rear two or three broods in the course of the year. The female lays from three to five eggs, which are oval and white, measuring one inch six lines in length, and one inch three lines in breadth. The nest is formed in some gloomy corner in the roof of an old barn, in old malting kilns, or deserted ruins of any sort, and also in holes of decayed trees. Young birds have been found in July; they have also been found in September, and Mr. Waterton mentions having found young Owls in the nest so late in the year as December. Mr. Blyth, in the "Field Naturalist's Magazine," says, that a nest of the Barn Owl, one summer, in the neighbourhood of Tooting, in Surrey, contained two eggs, and when these were hatched two more were laid, which latter were probably hatched by the warmth of the young ones; a third laying took place after the latter were hatched, and the nest at last contained six young Owls of three different ages, which were all reared.

These birds seldom leave their retreat during the day, but a little before sunset, when mice begin to move, they sally forth and may be observed hunting along hedgerows, orchards, and other small enclosures near out-buildings. They may be seen, says White of Selborne, to beat the fields over like a setting dog, and often drop down in the grass or corn. Should they have young ones, they may be observed carrying the prey in their talons to the nest; but as their feet are often required to enable them to gain access to the nest, the birds alight on some neighbouring perch and transfer the prey to the

beak. In order to give them a firmer grasp, they are supplied with a serrated edge to the middle claw.

This species is very generally distributed over the globe. It is common in the more temperate portions of Europe. It inhabits India and Japan, according to M. Temminck and others. It is found in Africa, even as far south as the Cape of Good Hope, and has also been observed, though more thinly diffused, in the United States of North America.

There is one species of Owl which exhibits a striking peculiarity in its habits, namely, the Burrowing Owl (*Nyctipetes cunicularia*). This Owl, instead of taking up its abode in the gloomy retreats or solitary recesses in crumbling ruins or extensive forests, delights to dwell in the wide and open plains, and often in company with animals remarkable for their social and orderly disposition, the marmots, or prairie dogs. Their presence appears to be required in these places to keep in check the too rapid increase of coleopterous and other insects, that breed in profusion in those localities. They are small birds, and derive their name from their habit of burrowing into the earth, to form themselves a house and retreat from danger or inclement weather, as well as a nestling-place for their young. In the trans-Mississippian territories of the United States, says Charles Buonaparte, Prince of Musignano, the Burrowing Owl resides exclusively in the villages of the marmot, or prairie dog, whose excavations are so commodious as to render it unnecessary that our bird should dig for himself, as he is said to do in other parts of the world, where no burrowing animals exist.

These villages are very numerous. They are composed of slightly elevated mounds, and the entrances placed either at the top or side. The Burrowing Owls are diurnal feeders, and are generally believed to live upon insects, mice, and reptiles.

Like all diurnal Owls, the Burrowing Owls have small openings to the ears, which are destitute of operculum; the facial disk, which is composed of slender feathers, assuming the form of short bristles towards the toes. The lobes beneath the toes are large and much granulated; the nails are rather small, the posterior one having no groove beneath. The wings are short and rounded. Length of bird nine and a half inches, and the extent of the wings two feet. The general colour of the plumage is a light burnt umber, spotted with whitish; the lower part of the breast and belly are whitish; the feathers of the former being banded with brown. Wings darker than the body, spotted and banded with whitish. The bill is horn colour, paler on the margin, and yellow on the ridges of both mandibles; the inferior mandible is strongly notched on each side; irides bright yellow; feet dusky, and rather long.

Here we take leave of the raptorial order, although there are many varieties of this last family. Sufficient has perhaps been said to give a general idea of the habits and economy of the birds, as well as to exhibit the beautiful adaptation of their structure to the functions they perform, and the importance of the part they have to act in the grand scheme of creation.

We have endeavoured to trace a gradation of affinities through the whole tribe, from the carrion-loving bird of

the Vulture family to the more generous and powerful raptorial birds; to delineate the daring and beautiful characteristic features of the Falcons, and to show the gradual decline of the raptorial courage and power exhibited in the sub-typical and aberrant groups of the family. We have traced the connecting links between the more typical species of the *Falconidæ* and the *Strigidæ*, and have observed that while some of the more powerful of this last family are capable of destroying quadrupeds of considerable size, the species last noticed preys principally upon insects.

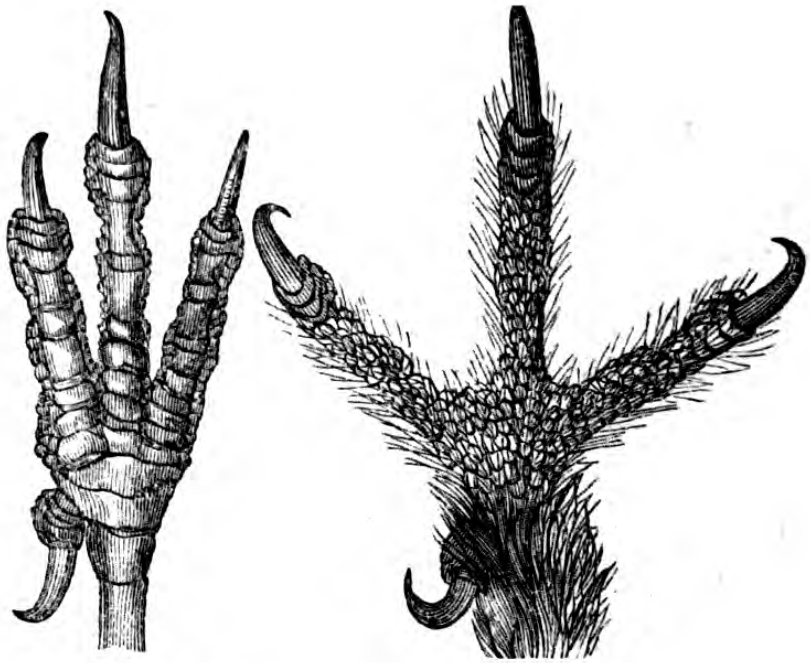
N°1. The Red-backed Shrike.
2. The Butcher Bird.

Shrikes.

Order, *Insessores.*

The insessorial or perching order of birds is by far the most extensive and most varied in the whole circle of ornithology; it comprehends all that vast assemblage of species distinguished by Linnæus and others under the separate orders of *Picæ* and *Passeres*, and comprises all those tribes and families which live habitually among trees, and feed principally upon insects and vegetable substances, though some of them do occasionally feed upon the smaller species of birds, when driven to attack them by a scarcity of other food. The feet of the birds of this order are, as we might hence suppose, especially constructed for grasping, so as to perch upon the smaller branches of trees, the hind toe being on the same level or plane with those in front. The number of toes is generally four, one of them being directed backwards; among the scansorial (climbing) birds, they are usually placed two before and two behind, and a few are distinguished by having only three toes, two of which are directed forwards and one backwards. The two lateral toes of the perching foot are generally unequal in length, but in birds which often frequent the ground they are equal to one another or nearly so.

The perching foot differs from that of the raptorial (birds of prey) order, in having the three anterior toes not only directed forwards, but by those two of them which are on the sides having no capability of being turned in a different direction in relation to the middle toe. This will be understood by reference to the illustration, in which is represented the foot of a crow and that of an owl.



The bill varies in this order perhaps more than any other feature, both in form, magnitude, and strength. In some we observe a tooth in the upper mandible, having a resemblance to that of the falcons, while in others there is not the slightest trace of this process. In some families the bill is comparatively soft and weak; in others hard and remarkably strong; in some it is attenuated to an extraordinary degree, in others strongly curved and hooked; but the varied structure and functions of this organ will be better exhibited

when the economy of the different species is considered.

In the present order, we find birds the most resplendent in plumage, the most melodious in song, the most ingenious architects (as exhibited in the construction of their nests), the greatest mimics, and the most loquacious linguists of the feathered race.

The order is divided into five tribes, viz. :—

I. *Dentirostres*, or those birds which have a tooth-like process, or strong emargination, on one or both mandibles, and are not raptorial, but organized for feeding upon insects, which they find upon or about trees and shrubs.

II. *Fissirostres*, or those birds which are organized for feeding upon flying insects, having the bill very broad at the base, and consequently an extensive gape; they seldom alight upon the ground.

III. *Scansores*, comprising those species which are particularly organized for climbing about trees, the feet not being adapted to terrestrial habits.

IV. *Tenuirostres*, having the bill long and slender, and organized for extracting insects and their food in general, from flower-tubes and other places of concealment; seldom frequenting the ground.

V. *Conirostres*, distinguished by the birds of which it is composed having the bill more or less of a conic form, and an organization peculiarly fitted for feeding upon seeds, fruits, and molluscous insects, the feet of some of the species being adapted equally for walking and perching.

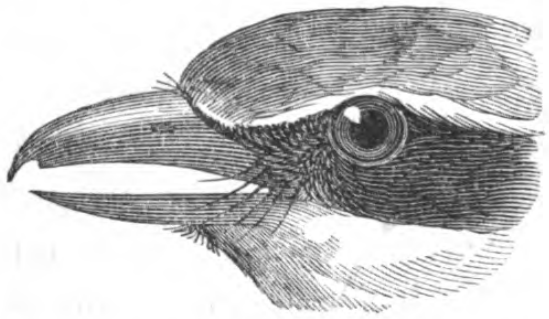
The first of these tribes now claims our attention, and we proceed to examine the peculiarities and

economy of the tribe, and the modification of form by which its members are fitted to perform the various functions for which they were created.

The Dentirostral tribe is composed of five families: the Shrikes (*Laniadæ*); Thrushes (*Merulidæ*); Sylvan Warblers, a family of small birds comprised under the term *Sylviadæ;* the Chatterers (*Ampelidæ*); and the Flycatchers (*Muscicapidæ*).

The Shrikes (*Laniadæ*) approach the nearest of this order, in their habits and conformation, to raptorial birds, being the most rapacious birds among the *Dentirostres;* and consequently they are distinguished by a strongly-developed tooth on each side of the upper mandible near the tip of the bill. These birds, says Mr. Swainson, are the falcons of the insect world, just as much as the *Raptores* are the devourers of the feathered creation. Although, generally speaking, insectivorous in their feeding, Shrikes will occasionally prey upon small birds, which they kill by striking on the head, or pinching the neck with the bill, and afterwards they hew open the skull and devour the brain of their victim. The raptorial birds exclusively employ their talons in seizing their quarry; with these weapons they transfix their victim, or strike it with such force as frequently to cause instant death; the bill is reserved as a knife to separate the parts. Among the *Dentirostres*, this process is partially reversed: the bill, and not the feet, is the instrument of capture; and that the struggles of its prey may not injure the face of the bird, this organ is either much lengthened, or the base is so defended from the possibility of mischief by rigid feathers directed for-

wards, that the face becomes secure from all injury. The bill itself, as in that of *Lanius excubitor*, the Great Ash-coloured Shrike, is strongly curved towards the tip of the upper mandible, which is furnished with a decided tooth; it is evidently a carnivorous bill, and is, moreover, so much compressed laterally as to have great strength in proportion to its quantity of matter, and this enables the bird to pinch with considerable force, and to take a firm hold of its prey, as well as to tear or divide it in pieces. The claws also as instruments of capture, in the typical group, are peculiarly fine and sharp; a character which, according to Mr. Swainson, is common more or less to the whole family.



They are short-winged birds; the first quill being of moderate length, the second shorter than the third and fourth, which are the longest in the wing. The wing is thus rounded in its termination, and therefore much better adapted for ascending and descending, or short and vigorous flight, than for continuous motion through the air. This agrees with their habit of hawking upon the wing for the larger insects, such as beetles, along hedges and coppices. The tail is long, strong in its coverts, and capable of being spread out like a fan, and is peculiarly serviceable in regulating the ascending and descending flight of the bird when in pursuit of its food.

Some of these birds have a singular habit of impaling insects or a portion of their superabundant food on thorns, as a butcher does a carcase on a hook that he may more easily dissect it; hence the term Butcher-bird, by which they are designated. Various conjectures have been formed as to the object to be gained by such a proceeding. Some persons have attributed this habit to the cunning of the bird in thus endeavouring to allure other prey; some have considered it a mere act of wanton cruelty; and others as the result of a hoarding propensity, like that of the jays and magpies; and by Wilson it has been considered to enable the Shrike more readily to tear the prey to pieces as it feeds, than by using his feet and claws, which are by no means proportionally strong with the beak.

Shrikes associate in families, and migrate according to the season. As is the case with predatory birds generally, the pairs evince great attachment for each other, and the parent birds equal attachment for the family. There are a great many species of the Shrike enumerated by ornithologists, but only three visit this country, and two of these only occasionally as stragglers. The Red-backed Shrike, or Flusher (*Lanius collurio*), is a more regular visitor to our island, arriving in May, and departing again for the south in November. The female bird, as is usual in the birds of prey, is considerably larger than the male, but the colours of each do not differ materially. The upper parts of the bird are reddish-brown, and the under portion soft, greyish-white; but the under part of the male has a tinge of rose colour, while that of the

female, still preserving a slight resemblance to the rapacious bird, is marked with dusky lines. It is an active bird, and frequents hedges, coppices, and the margins of woods, feeding upon the beetles which resort to the same localities. The nest is very carefully hidden in some close hedge or bush, or in one of those short but thickly-branched trees which are so common on the margins of forests. Externally it is composed of mosses and vegetable fibres, mixed with wool, and the inner part is composed of hairs very neatly interlaced together. The eggs are five or six in number, having the ground-colour whitish, but with the same blush, rosy tinge which characterises the under part of the male bird, and they are marked with spots of reddish-brown.*

These birds, observes Mr. Blyth, in a paper in the "Magazine of Natural History," may be commonly seen perched like chats upon the topmost twig of some thick hedge; or, like flycatchers, upon the bare branch of some tree growing out of the hedge, or sitting upon a post or paling, always in a conspicuous situation, where their vision can extend over a considerable range, and whence they often dart after the larger passing insects, or upon any small quadruped or bird which lucklessly comes within the sphere of their downward leaping flight; or they slowly hover along the hedges, often remaining a long time fixed over a particular spot, moving the wings rather quickly, but making no progress forward, then perhaps advancing two or three yards and again remaining fixed in the air, and at length, when they do alight, generally hovering

* British Cyclopædia.

for some time around the branch upon which they are about to settle. On these occasions it appears to be principally in search of the larger coleopterous insects; and whilst the May-chaffer (*Melolontha vulgaris*) lasts, this seems to constitute almost its sole food, as it also does that of many other birds which, at other seasons, subsist very differently. Having captured one of these insects in its bill, it flies with it to a perch, takes it in one foot, which it holds up to the mouth like a parrot, and picks off a piece with its beak, still holding up the foot with the remainder, till it is all finished. When its appetite is nearly sated, it becomes more dainty, eats only the abdomen, and impales the still-living body upon a thorn. This habit of the Shrikes of impaling their superfluity of food, I am of opinion (says the writer), is precisely analogous to the hoarding instinct displayed by the *Corvidæ*, the true titmice, and the nut-hatches, that they may thus sometimes furnish a resource against future need; or it may be that Providence has thus intended them to regulate more effectually the number of those creatures upon which they were appointed to feed.

It is not perhaps very often, except when, after a long continuance of rain, the various larger insects have become scarce, that this species of Shrike attacks the smaller vertebrate animals; its principal and main food consisting usually of the larger coleopterous and hymenopterous insects, and, towards the autumn, of grasshoppers. They devour vast numbers of wasps. This species is commonly known among the peasantry of Kent and Surrey, and some of the adjoining

counties, by the homely appellation of "Jack Baker."

The great American Shrike, or Butcher-bird, described by Wilson under the name of *Lanius excubitor*, is ten inches in length, and thirteen in extent. The upper parts are pale cinereous; sides of the head nearly white, crossed with a bar of black, that passes from the nostrils, through the eye to the middle of the neck; the whole under parts white or dusky, and thickly marked with minute transverse curving lines of light brown; wings black, tipped with white, with a single spot of white in the primaries just below the coverts; the scapulars, or long downy feathers that fall over the upper part of the wing, are pure white; the tail is cuneiform, consisting of twelve feathers, the two middle ones wholly black, the others tipt more and more with white to the exterior ones, which are nearly all white; the legs, feet, and claws are black; the beak straight, thick, of a light blue colour, the upper mandible furnished with a sharp process, bending down greatly at the point, where it is black, and beset at the base with a number of long black hairs or bristles; the nostrils are also thickly covered with recumbent hairs; the iris of the eye is light hazel, pupil black.

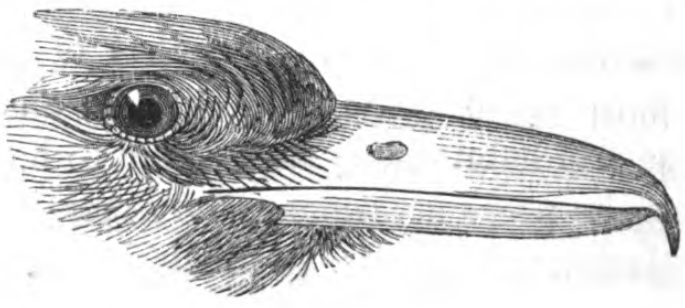
When we compare the beak of this species, says Wilson, with his legs and claws, they appear to belong to two very different orders of birds; the former approaching, in its conformation, to that of the accipitrine, the latter to those of the pies; and, indeed, in his food and habits he is assimilated to both. Like the former, he preys occasionally on other birds; and, like the latter on insects, particularly grasshoppers,

which I believe to be his peculiar food; having at almost all times, even in winter, found them in his stomach.

The character of the Butcher-bird is entitled to no common degree of respect. His activity is visible in all his motions; his courage and intrepidity beyond every other bird of his own size (one of his own tribe only excepted, *L. tyrannus*, or King-bird); and in affection for his young he is surpassed by no other. He associates with them in the latter part of the summer, the whole family hunting in company. He attacks the largest hawk or eagle, in their defence, with a resolution truly astonishing; so that all of them respect him, and on every occasion decline the contest. As the snows of winter approach, he descends from the mountainous forests, and from the regions of the north, to the more cultivated parts of the country, hovering about our hedgerows, orchards, and meadows, and disappears again early in April.

Audubon says that "the propensity of these birds to impale insects and small birds on the sharp points of twigs and on thorns, which they so frequently do at all seasons of the year, is quite a mystery to me, as I cannot conceive what its object may be."

The Bush Shrikes (*Thamnophilinæ*) are distinguished



from *Laniadæ* by the more elongated form of the bill, which is strong, straight for the greater part of its length, and bent only at the tip,* where the inflection is abrupt; the tooth, too is much less developed, although in some species it is still very prominent, The feet are more robust, but the claws, no longer fine or attenuated, are broad and thick. The economy of these birds is totally different from those previously described. They live and search for their prey among thick foliage; hence their peculiar name of Bush Shrikes. Their wings for this purpose are very little used, and we accordingly find these members particularly short and feeble; while the tail is somewhat lengthened, and more or less rounded.

Although many of the species far exceed the size of the thrush, there are others not much bigger than a wren. The species are very numerous in the hotter latitudes of America, to which districts they are principally confined. The plumage is thick, but the texture of the feathers uncommonly soft and lax; the colours are always sombre, but often variegated with much elegance by dark bands and white spots.†

In Africa these birds are represented by the genus *Malaconotus*, which contains the most beautiful of all the Shrikes. The largest species yet discovered being the Large Grey-headed Bush Shrike (*Malaconotus olivaceus*). This species is equal in size to a blackbird; the wings, however, are short and rounded, indicating a most feeble flight, while the thickness and breadth of the claws show that they are not at all formed for seizing or grasping anything but the

* Swainson. † Ibid.

branches of trees; their great curvature, indeed, giving them an unusually firm grasp of such substances, which is further increased by the connection of the middle toe to half the length of the outer one, producing a great breadth to the sole of the foot.

The bill is black, and between that and the eye is a broad white stripe. A mantle of clear slate-colour spreads over the head, ears, sides, and upper part of the neck, all the remaining parts above being greenish or yellow-olive; each of the lesser and greater coverts, and also the tertials and tail-feathers, is marked at the tip by a cream-coloured spot; half of the greater quills are also edged with the same colour. The wings are not longer than the tail-coverts. The under plumage, from the chin to the vent, is bright and pure yellow, deepest on the breast and paler on the belly. The tail is but slightly rounded, the legs pale, and the inner toe conspicuously shorter than the outer. The total length is ten inches and a half.*

Belonging to the same genus there is a very remarkable species, a native of Africa, which, from the singularity of its plumage on the lower part of the back, is called the Puff-backed Bush Shrike. All the Bush Shrikes, observes Mr. Swainson, as their generic name implies, have the feathers on the back unusually long and very soft; but in the one now under consideration, these characters are developed in a most singular way. When the feathers on the back are raised, as they occasionally are, by the bird itself, they seem to form a semicircular tuft of the most delicate and beautiful white down, exactly resembling

* Birds of Africa.

that of the swan, and as if that part of the body was protected by an artificial tippet. When in a state of repose, this singular appearance completely vanishes, and the feathers lie on each other as on an ordinary bird.

The male and female are differently coloured. The first has the upper plumage black, glossy on the head, ears, neck, and interscapulars, but brown on the wings and tail; on the lower part of the back the feathers are white, those on the surface having a grey tinge; the scapulars, with the margins of the wing-coverts and middle feathers, deep black, the rest brown; the whole of the under plumage is white.

In the female there is no black whatever. All the upper plumage is light grey, palest on the rump, and with dusky stripes on the head; the wing-coverts and quills have whitish margins; under plumage from the chin to the breast fulvous or buff, which gradually becomes almost white on the body, belly, and vent; tail and wings deep brown; the back feathers are not near so long as those of the male.

This appears to be a social species, living in small companies, much in the manner of our long-tailed tit, and if one discovers food, it summons the rest to partake of it also. Its food is the larva and pupæ of insects, and it builds in thorny thickets. It is seven inches and a half in length, the tail measuring three inches and a half.*

The Tyrants *(Tyrannidæ)* are arranged by Mr. Swainson as a sub-family of the Shrikes, and they were also considered by Mr. Vigors as belonging to that

* Birds of Africa.

family. One of the tropical species is the King-bird of North America (*Tyrannus intrepidus*). The trivial name of King-bird was applied to this species on account of its intrepidity, and the authority which it assumes over all others, particularly during the time of breeding, when he will attack without discrimination every intruder near his nest. Hawks, crows, and even eagles, this dauntless champion (he is only five inches and a half in length) fears not to encounter; mounting above the eagle he darts down upon his back, rises again and repeats his merciless attack, to the great annoyance of the monarch of the birds.

His usual mode of flight, Wilson observes, is singular. The vibrations of his broad wings, as he moves slowly over the fields, resemble those of a hawk hovering and settling in the air to reconnoitre the ground below; and the object of the King-bird is no doubt something similar, viz., to look out for the passing insects, either in the air or among the flowers and blossoms below him. In fields of pasture, he often takes his stand on the tops of the mullein, and other rank weeds, near the cattle, and makes occasional sweeps after passing insects, particularly the large black gadfly, so terrifying to horses and cattle. His eye moves restlessly around him, traces the flight of an insect for a moment or two, then that of a second, and even a third, until he perceives one to his liking, when with a shrill sweep he pursues, seizes it, and returns to the same spot again to look round for more. He hovers over a river, sometimes for a considerable time, darting after insects that frequent such places, snatching them from the surface of the water,

and diving about in the air like a swallow, for he possesses at will great power of wing. Numbers of them are frequently seen thus engaged for hours together, over the rivers Delaware and Schuyskill, in a calm day, particularly towards evening. He bathes himself by diving repeatedly into the water from the overhanging branches of some tree, where he sits to dry and dress his plumage.

The general colour of the King-bird above is a dark slaty-ash; the head and tail are nearly black, the latter even at the end, and tipped with white; the wings are more of a brownish cast; the quills and wing-coverts are also edged with dull white; the upper part of the breast is tinged with ash; the throat, and all the rest of the lower parts, are pure white; the plumage on the crown, though not forming a crest, is frequently erected, and discovers a rich bed of brilliant orange, or flame colour; when the feathers lie close this is altogether concealed. The bill is very broad at the base, overhanging at the point, and notched, of a glossy black colour, and furnished with bristles at the base; the legs and feet are black, shaded with grey; the eye hazel.

The characters which distinguish the Tyrant Shrikes from those previously described consist in the bill being considerably depressed, and more or less compressed towards the point; the culmen is not arched, but the tip is abruptly hooked; the bill is short, more or less triangular, and beset with bristles at the base. In proportion to the weakness of the bill, the legs and feet become small and slender. The wings develope a greater power of flight, and are so far pointed, that

the first and second quills are very little shorter than the third and fourth, which always exceed the others; sometimes indeed the wings are so admirably adapted for rapid flight, that the second quill is as long as any of the others, and the first very slightly shorter. The tail is either forked, divaricated, or square; and the caudal feathers are peculiarly broad, particularly towards their extremity.

Another sub-family of the *Laniadæ*, in Mr. Swainson's synopsis, is composed of the Caterpillar-catchers (*Ceblepyrinæ*). These birds are strictly confined to the Old World, as the last are to the New, yet not one species is found in Europe. Their bill is nearly as much depressed as that of the Tyrant, but the absence of long bristles round the base shows that their food is quite different; we consequently find that these birds live upon soft caterpillars, which they search for among the foliage of high trees. Nearly all the species are further distinguished by the peculiar construction of the feathers on the back; they are very thick set, and when the hand is passed over them in a direction towards the head, they feel as if intermixed with little sharp spines, concealed beneath the surface. This singular construction is seen also in the Trogons, and, in a less degree in the families of Orioles and Cuckoos; but for what particular purpose it is intended we know not.*

* Natural History and Classification of Birds.

No 1. The Golden Oriole.
2. The Throstle.

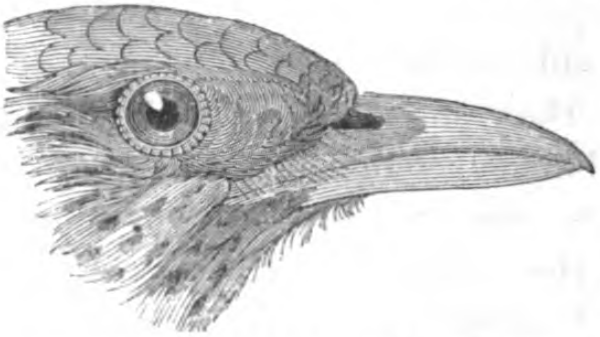
Thrushes.

We have in another part of this work described at length the first family of the *Dentirostres*, and we are now conducted by the Drongo Shrikes (*Dicrurinæ*, according to Mr. Swainson) to the second family, the Thrushes (*Merulidæ*). The birds which compose this numerous family do not display the formidable tooth which is characteristic of the Shrikes, but the notch or emargination of the mandibles is sufficiently strong in the Thrushes to assist them in gaining a firm hold of their food, which they beat upon the ground or upon a stone. The food of this family is not, however, confined to the insect world or molluscous animals; fruits of all kinds are equally acceptable to them. The feet of the Thrushes exhibit a departure from the raptorial character, still observed in some species of the Shrikes, and are adapted equally for walking and perching. The claws are not so finely acute and curved as those of the Shrikes, and the legs are stronger in their structure and more muscular. The Fieldfare, the Blackbird, and all the true Thrushes are well known to frequent the ground as much as trees. Many of them are gifted with a powerful, melodious voice, unequalled by any other bird either in variety, compass, or perhaps in tone.

Their flesh is likewise celebrated for the delicacy of its flavour.

The species are exceedingly numerous. Thrushes, or birds resembling Thrushes, are found in almost every part of the world. Those which inhabit high latitudes are migratory, but those which dwell in milder and more uniform climates are stationary.

The bill of the Thrush, instead of being strong, short, and dentated, as in the more powerful Shrikes, is considerably longer and more slender; it is often gradually curved from the base, and slightly bending towards the point, which is rather compressed; the upper mandible is emarginated near the tip, and the rictus is furnished with a few bristles. The legs are of various lengths, according to the habits of the bird or the nature of its haunts; they are strong and muscular, the outer toe being joined at its base to the middle one, and the claws being but slightly armated.



This family appears to be joined to the Shrikes by the Short-legged Thrushes (*Brachipodinæ*), and is effected, in the opinion of Mr. Swainson, by the genus *Tricophorus*, or Bristle-necked Thrushes, which pass almost immediately into the Drongo Shrikes. These birds are peculiar to the hot latitudes of Western Africa and Oriental India, and have derived their name from three or four very long bristles which spring from the back of the neck or from the nape.

These bristles, although well defined, are very delicate. The bristles round the bill of these birds are long and rigid, and indicate a habit of catching insects upon the wing. The feet are generally very short, and the hind toe almost as long as the tarsus. The wings short and rounded. Feathers on the rump very long and thick set—a character which is very highly developed in some of the Bush-shrikes.

We must again resort to the pages of Wilson for an interesting account of the *Icteria polyglotta*, known in America by the name of the Yellow-breasted Chat. It arrives in Pennsylvania about the first week in May, and returns to the south again as soon as its young are equal to the journey, which is generally about the middle of August.

This bird delights in thickets of hazel, brambles, vines, and bushy underwood, and is so jealous of any intrusion upon his habitation, that he scolds every one whom he sees approaching, in a variety of uncouth and odd monosyllables, which it is difficult to describe, but which may be imitated so as to allure the bird to follow the sound for the length of a furlong. When this is tried, his answers are constant and rapid, evincing anger and anxiety, and while the bird remains unseen, the voice shifts from place to place among the bushes, as if it proceeded from a spirit. First is heard a repetition of short notes, resembling the whistling of the wings of a duck or teal, at first loud and rapid, and falling lower and slower until they become detached notes; then sounds like the bark of young puppies, followed by hollow guttural sounds, each eight or ten times repeated,

more like those emitted from the throat of a quadruped than that of a bird; after these are sounds like the mewing of a cat, but hoarser. These are uttered with vehemence, in such various keys, and with such peculiar modulations of voice, as to seem at times far away and anon close at your side—now on this hand, now on that; so by this deceptive ventriloquism you are at a loss to determine whence the sounds proceed. If the weather be mild and serene, with a clear moonlight, he gabbles in this strange dialect almost incessantly through the night, as if disputing with his own echoes; but as the season advances, the nocturnal babbling ceases.

The nest is made about the middle of May. While the female is sitting, the male cries more loudly and incessantly. When once aware that you have seen him, he is less careful to conceal himself; sometimes he mounts into the air, nearly vertically, thirty or forty feet high, with his legs dangling; descending, as he rose, by repeated jerks, as though highly irritated. All this noise and gesticulation we must attribute to his extreme affection for his mate and young; and when we consider how far he comes, the few young produced at a time, and that seldom more than once in the season, we can see the wisdom of Providence very manifestly in the ardency of his passions.

The food of these birds consists chiefly of large black beetles and other coleopterous insects; whortleberries and other similar fruits have frequently been found in their stomach.

The Yellow-breasted Chat is seven inches long, and

nine inches in extent; the whole upper parts are of a deep rich olive-green, except the tips of the wings and interior veins of the wings and tail-feathers, which are dusky brown; the whole throat and breast is of a most brilliant yellow, which also lines the inside of the wings, and spreads on the side immediately below; the belly and vent are white; the front slate coloured, or dull cinereous; toes black; from the nostrils a line of white extends to the upper part of the eye, which it nearly encircles; another spot of white is placed at the base of the lower mandible; the bill is strong, slightly curved, sharply ridged on the top, compressed, overhanging a little at the tip, not notched, pointed, and altogether black; legs and feet light blue.*

In the sub-family (*Oriolinæ*) are some very splendid-coloured birds. To this division belongs the magnificent *Sericulus chrysocephalus*, or Regent Oriole of New South Wales, and the no less splendid *Oriolus paradiseus*, or Golden Bird of Paradise from New Guinea. The European Golden Oriole (*Oriolus galbula*) is a well-known and beautiful example of this group. It is only an occasional visitor to these islands. The rich yellow or golden colour of its plumage is strikingly varied, as in most of the species, with black. It associates with others of its species, flying about from tree to tree in small flocks. They search for caterpillars and soft insects among the foliage of lofty trees; and as they do not catch their insect prey upon the wing, the rictus is unprovided with bristles. The rump-feathers of the Orioles are

* American Ornithology.

formed something in the same manner as those of the caterpillar-catchers among the Shrikes, which they further resemble in the nature of their food.

The true Thrushes are well represented in this country by our Blackbird, Throstle, and Fieldfare, whose habits and character are so well known. The Throstle is generally considered one of our finest song-birds, and therefore we shall notice more particularly its attractive qualities and history. The Song-thrush (*Merula rustica*) is called in France *La Grive, par excellence*, the same term being applied to those species whose plumage is what is termed in that country *grivelé*, marked with small black or brown spots. Of these the Throstle is in greatest repute, being pre-eminent in its musical powers, engaging in its manners and appearance, and above all the others prized as an article of food. The tone of its voice is as superior in quality to that of most of our resident birds, as its song exceeds theirs in power and variety. It continues to sing through the greater part of the year, and its voice appears only to be hushed when moulting and in the severest part of winter.

It is not gregarious, but is so distributed that scarcely any district, not entirely destitute of trees, is found to be without it. It frequents small woods and shrubberies, and is often found to breed in furze-brakes. It feeds on insects, worms, various species of snails (the shells of which are broken on a stone, and afterwards shaken off with great dexterity), fruit, and, in the winter, various berries. In the grape countries of Europe, observes Mr. Yarrell, the Thrush feeds

luxuriously during autumn on ripe grapes; and in France this bird is then in great request for the table, from the extra condition and flavour which abundance of this rich food imparts to its flesh.

Towards the end of autumn, our resident Thrushes receive a considerable accession in number from the birds which arrive from the north, from whence they are driven by frost or hard weather.

The nest of the Throstle, like that of the Blackbird, is begun early, and is of a compact structure, formed externally of green moss and fibrous roots, and the inner surface is lined with a thin coating of mud and cowdung mixed with rotten wood, and so equally and smoothly spread over and cemented that, when dry, it will for a time hold water.

Another species of the genus *Merula* visiting this country is the Redwing (*Merula iliaca*). It has not been known to breed in this island, but arrives upon our north-eastern coast about the middle or latter part of October. It is a smaller species than the Throstle, and the colours are somewhat darker and brighter. The under wing-coverts and axillary feathers are bright reddish-orange, from which peculiarity the bird has derived its name. The upper parts are greyish-brown; the under whitish, and marked with conspicuous dusky brown dashes.

This bird breeds on the bleak and bushy grounds in Holland and Germany, and is there said to have an agreeable song. It is called the Nightingale of Norway; and Linnæus several times, in his Tour in Lapland, notices the song of the Redwing, "whose amorous warblings from the top of the spruce fir were

delightful. Its high and varied notes rival those of the nightingale itself." In winter, when frequenting our fields, its song is never heard, owing, it may be, to the rigour of the weather and the want of its favourite food depriving it of that energy which is excited by the more general temperature of warmer seasons. It resorts in this country to parks and open grounds ornamented with clumps of trees, and, like the Throstle, which they most resemble in appearance, they seek subsistence in mild weather in pastures and moist meadows, feeding on worms, snails, and other soft-bodied animals. In very severe weather, when the ground is frozen for weeks together, Redwings appear to suffer more than most other birds. When winter is over, they gradually retire northwards to their summer haunts, visiting the Faroe Islands and Iceland; they are found also in Russia.

The Mocking Thrush (*Orpheus polyglottus*) is a very extraordinary bird, says Wilson. In the extent and variety of vocal powers it is unrivalled by all the feathered songsters of its native clime. It is where the great Magnolia shoots up its majestic trunk, writes Audubon, crowned with evergreen leaves and decorated with a thousand beautiful flowers, that perfume the air around; where forest and field are adorned with blossoms of every hue; where the golden orange ornaments the garden and the grove; where Bignonias of various kinds interlace their climbing stems around the white-flowered Stuartia, and mounting still higher over the summits of the lofty trees around, accompanied with innumerable vines that here and there festoon the dense foliage of the magnificent woods,

imparting to the breeze a slight portion of the perfume of their clustered flowers; where a genial warmth seldom forsakes the atmosphere; where berries and fruits of all kinds are met with at every step; in a word, it is where Nature seems to have paused, as she passed over the earth, and, opening her stores, to have strewed with unsparing hand the diversified seeds from which have sprung all the beautiful and splendid forms which it is vain to attempt to describe, that the Mocking-bird has fixed its abode, that there only its wondrous song is heard.

It is, continues Audubon, in Louisiana that these bounties of Nature are in greatest perfection; and it is there that the love-song of the Mocking Thrush is heard.*

The plumage of the Mocking-bird, Wilson says, though none of the homeliest, has nothing gaudy or brilliant in it, and, had he nothing else to recommend him, would scarcely entitle him to notice; but his figure is well proportioned and even handsome. The ease, elegance, and rapidity of his movements, the animation of his eye, and the intelligence he displays in listening to and laying up lessons from almost every species of the feathered creation within his hearing, are really surprising, and mark the peculiarity of his genius. To these qualities we may add that of a voice full, strong, and musical, and capable of almost every modulation, from the clear mellow tones of the wood thrush to the savage scream of the bald eagle. In measure and accent he faithfully follows his originals; in force and sweetness he improves upon them.

* American Ornithological Biography.

In his native groves, in the dawn of dewy morn, when the woods are already vocal with the multitude of warblers, his song is heard above all his competitors. The ear listens to his music alone, that of others seeming only an accompaniment; nor is his song merely imitative. His own notes, easily distinguished by those acquainted with those of other native birds, are bold and full, and extremely varied. They consist of short expressions of two, three, or at most five or six syllables, interspersed with imitations, all uttered with emphasis and rapidity, and continued with ardour for thirty to sixty minutes at a time. His expanded wings and tail, glistening with white, and the buoyant gaiety of his action, arresting the eye, as his song does the ear, he sweeps round with ecstasy; he mounts and descends as his song swells or dies away; and as Mr. Bartram has beautifully said, "he bounds aloft with the celerity of an arrow, as if to recover or recall his very soul, expired in the last elevated strain."

Insects, berries, and other fruits, form the food of the Mocking-bird. In winter nearly all the tribe approach the farmhouses and plantations; they are frequently seen on the roofs ór perched on the chimney-tops; yet they always seem full of animation. While searching for food on the ground their motions are light and elegant, and they frequently open their wings as butterflies do when basking in the sun, moving a step or two, and again throwing out their wings.

The Mocking Thrush is about nine and a half inches long, and thirteen in breadth. The upper parts of the

head, neck, and back are of a dark brownish-ash, and when newly moulted, a fine light grey; the wings and tail are nearly black, the first and second rows of coverts tipt with white; the primary coverts, in some males, are wholly white, in others, tinged with brown. The tail is cuneiform; the two exterior feathers wholly white, the rest, except the middle one, tipt with white; sides of the neck, breast, belly, and vent brownish-white; bill, legs, and feet black. The breast of the young bird is spotted like that of a Thrush.

There is a sub-family of Thrushes (*Crateropodinæ*, or Babblers), which is separated from all others by the size and strength of the feet. From the shortness of their wings, these birds fly with difficulty, and then only for short distances, retreating among thickets of weeds, and other aquatic plants, to which they cling. They show a singular partiality for places in the vicinity of water, and their notes are loud and disagreeable. The plumage in all species is sombre; it is long, lax, and soft, particularly the tail-feathers, which are generally broad and much rounded. As these birds perch so much among weeds, the strength thrown into their feet is not surprising; since, to retain a firm hold on such a slippery and awkward support, the legs must be capable of taking a wide grasp, and the claws sufficiently sharp to hold firmly the smooth stems. The bill is either long, moderate, or short; but in all cases it is very much compressed, entire, or very imperfectly notched, and of a peculiarly hard and horny appearance.*

Here we may place the Lyre-bird (*Menura superba*).

* Swainson.

Naturalists have differed in opinion as to its right position; but Cuvier says it evidently belongs to the *Passereaux*, its toes, except the outer and middle, which are united as far as the first joint, being separated. It comes near the Thrushes in the form of the bill, which is triangular at the base, and slightly compressed and notched at the tip.

This beautiful species is characterised by a singular development of the tail-feathers, which in the male bird assume the shape, when erect and expanded, of an ancient lyre, whence its name. It equals a common pheasant in size, but its limbs are larger in proportion, and its feet much larger; the toes are nearly equal in size, and armed with large, slightly-curved and blunt claws, that on the hind toe being the largest; the scales on the tarsi and toes are large bold plates, of a glossy black. The wings are short, concave, and rounded, and the quill-feathers are lax and downy. The length of the tail is about two feet; the colour of the feathers amber-brown, the two outer ones being grey, tipt with black, edged with rufous, and transversely marked on the inner web with transparent triangular bars. The general plumage of the bird is amber-brown above, tinged with olive, and merging into rufous on the wings and also on the throat. The under parts are ashy-grey. Little is known of the habits of this bird. Its powers of song are said to be great: at the early part of the morning it begins to sing, having a very fine natural tone; and gradually ascending some rocky eminence, it scratches up the ground in the manner of some of the pheasant tribe, elevating its tail, and at intervals imitating the

notes of every other bird within hearing; and after continuing this exercise for about two hours, he again descends into the valleys or lower grounds.

It is in the hilly districts of Australia that the *Menura* is found. Its manners are shy and recluse; it confines itself nearly always to the ground, seldom taking wing, and when forced to do so, flying with labour and difficulty. Bennett notices this bird in his "Wanderings in New South Wales." He says that it is a bird of heavy flight, but swift of foot; it seldom flies into trees, except to roost, and then rises only from branch to branch. They build in old hollow trunks of trees which are lying upon the ground, or in the holes of rocks; the nest is formed of dried grass or dried leaves scraped together: the female lays from twelve to sixteen eggs, of a white colour, with a few scattered light blue spots. The tail-feathers of the *Menura* are much in request at Sydney, and are sold for high prices; the number of the birds has therefore become considerably thinned in some districts.

Of all the tribes of insects, writes Mr. Swainson, which swarm in the tropics, the ants are the most numerous; they are the universal devastators, and in the dry and overgrown forests of the interior the traveller can scarcely proceed five paces without treading upon their nests. To keep these myriads within due limits, a wise Providence has called into existence the Ant Thrushes (*Myotherinæ*), and has given to them this particular food. Both are proportionate in their geographical range; for beyond the tropical latitudes the ants suddenly decrease, and their enemies, the *Myotherinæ*, totally disappear. As these insects are

chiefly to be searched for upon the ground, we accordingly find the legs of this family very much developed, and much more adapted, in their general structure, for walking than for perching; the wings, as being little used, are feeble, and the tail sometimes is so short as to appear almost cut off.

The genus *Cinclus* forms an aberrant group in this sub-family. Four species only appear to be at present known; besides the European Dipper, or Water Ouzel (*Cinclus aquaticus*), one has been described by M. Temminck, and two others have been ascertained by Mr. Swainson, one inhabiting America, the other India.*

In form, the European Dipper is short and compact; the head small, with the forehead narrow and low. The wings are short and rounded; as is also the tail. The legs are rather large, and strong; the lateral toes being equal in length, and the outer slightly connected at its base to the middle one. The plumage is remarkably thick and close, resembling that of the water-birds, and equally resists the water. These interesting little birds, says Mr. Selby, are natives of our island, but, from their peculiar habits, are confined to certain districts; those only where they can meet with clear and rocky streamlets. It is therefore in the mountainous tracts of Scotland and Wales, in some of the northern counties of England, in parts of Devonshire, and probably in Derbyshire, that we must look for these wild and solitary songsters. They are generally seen singly or in pairs, and always on the margin of the stream, or perched, in their particular attitude,

* Northern Zoology, vol. ii.

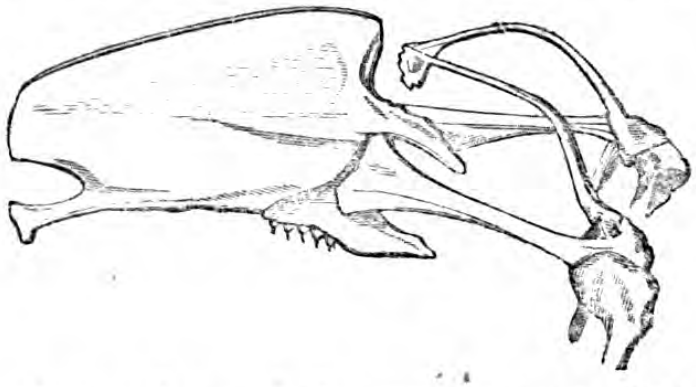
on some projecting stone in the middle of the water. From such situations Mr. Selby says he has frequently seen them dive below the surface, and remain submerged for a considerable time, occupied in pursuing the fry, or in search of the larvæ of aquatic insects. At other times they walk slowly into the water from the shallow part of a pool till it becomes of sufficient depth for diving; but he has not been able, even from close observation, to confirm the statement made by some naturalists, that they walk with apparent ease at the bottom.

The usual action of the Dipper, when sitting on the points of the little pieces of rock and detached stones in the pools, consists of a continual bending down of the head, and a flirting up of the tail at the same time; and it is from this peculiar motion of the head, and not from the fact of its getting into the water, that it is called the Dipper. From the shortness and broadness of its wings, and the compactness of its body, it gets very quickly into flight, and it skims along the surface of the water, almost touching with its wings, at every stroke, and when flying in this manner, it appears to get on more rapidly and with less fatigue than when it is higher above the surface.*

Its flight is rapid and even, not unlike that of the Kingfisher; and in the opinion of Mr. Gould, who has had opportunities of observing this bird both in Wales and in Scotland, its song, though louder, its habit of elevating and jerking its tail, its general manners, and the form as well as the materials of its nest, all closely resemble those of the wren.

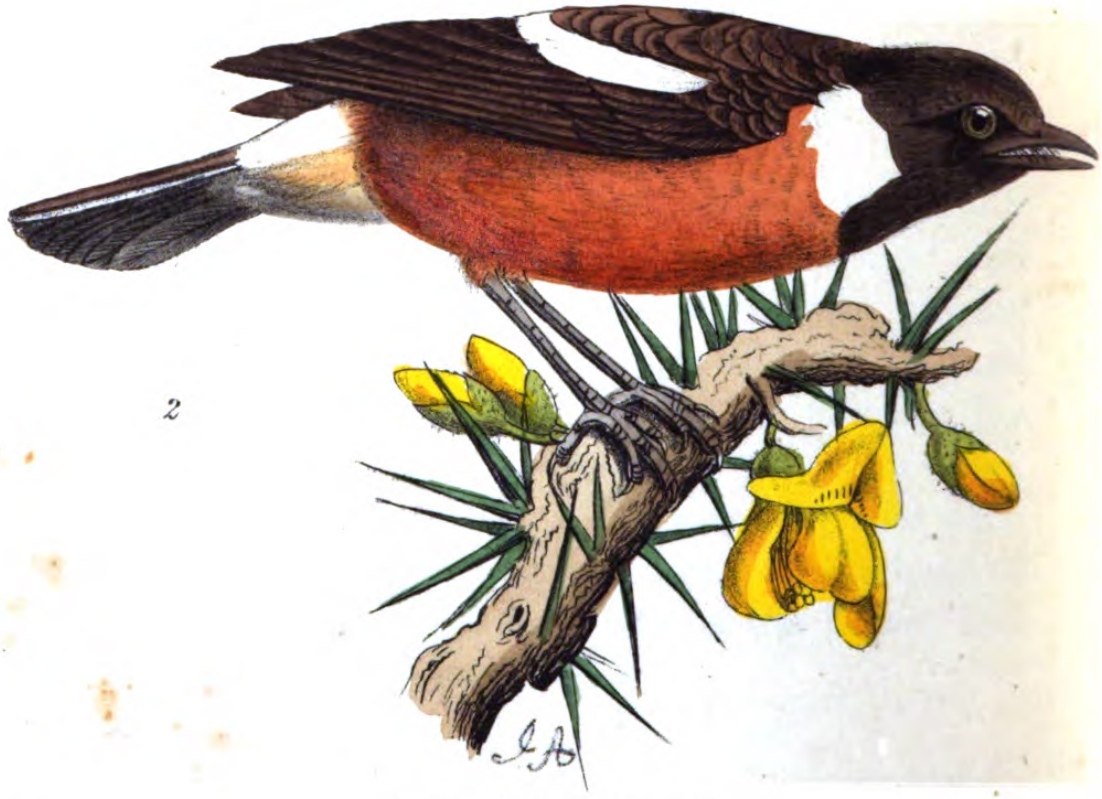
* British Cyclopædia.

The nest is formed early in the season, and is generally placed in some mossy bank, beneath a projecting stone, or some cavity in a moss-covered rock. It is large for the size of the bird, and considerable labour and ingenuity are bestowed upon it. It is similar in shape to that of the wren; composed externally of green moss closely interwoven, and lined within with decayed leaves or fibres, as the situation may best afford. It is seven or eight inches deep, and ten or twelve inches in diameter; the entrance to the cavity within is by a small aperture on one side. The eggs, which are from four to six in number, are white, and pointed at the smaller end. The annexed cut represents the sternum or breast-bone of the European



Dipper. The colour of the upper parts of the bird is brownish-black, with more of brown on the head and neck than towards the tail; under parts white, passing into reddish-brown about the middle of the belly, and becoming gradually deeper and blacker towards the end of the tail. The bill is dark brown; irides hazel, and the feet yellowish-grey. The sexes are like each other in their markings, only the brown on the head of the female is darker, and the white on the breast less pure. Length about eight inches.

1



2

1. The Yellow Wagtail.

2. The Stonechat.

Warblers.

Sylviadæ.

When we consider how numerous are the tribes of the insect race, and the amount of injury and annoyance they are capable of inflicting, not only on vegetation but on everything possessed of life—when we consider that there is scarcely any of the innumerable plants that clothe with so much beauty and variety the face of the ground, from the stately oak, the glory of the forest, to the most minute lichen that grows upon its trunk, that is not destined to be the food of some species of these minute, though by no means insignificant hosts—and when we are reminded of the ravages they have at times been permitted to commit in execution of the avenging will of Providence, and in manifestation of His power, we have no slight cause for gratulation that certain counter-checks have been ordained to restrain within due limits their power of doing mischief.

These insect creatures are ever busily employed in their peculiar office, and although they are doubtless of great service in the economy of creation, yet, from their very insignificance individually, it is only when they become pestiferous that we seem to become conscious of their existence. It is with the subjugation, and the destruction of the excess, of those innume-

rable swarms of insects which feed upon buds, foliage, flowers, and fruit, that the smaller kinds of birds of which this family is composed appear to be intrusted. They eagerly search for the secreted grub, or hunt the minute insect that makes its way along the crevices of the bark; they seek out the caterpillars which devour with such rapacious appetite the foliage of trees and shrubs, which they never leave until the appointed time for their transformation arrives, when they become the food of more active and differently-constructed birds.

No birds, Mr. Swainson observes, appear more perfectly adapted for this purpose than the Warblers. They are seen among us, for the most part, on the first appearance of spring, when the insect world is called into life and activity by the renewal of vegetation; and they depart towards autumn, when their minute prey diminishes, and their services are no longer required. As different localities are assigned to different tribes of insects, so do we find a like diversity of haunts among the various groups of Warblers. The Goldcrests and Wood-warblers (*Sylvianæ*) confine themselves principally to the higher trees, where they seek for winged insects among the foliage, or capture them like flycatchers, when attempting to escape. The Reed-warblers and Nightingales (*Philomelinæ*) haunt the vicinity of waters or the more dense foliage of hedges, for insects peculiar to such situations. The Stonechats (*Saxicolinæ*), on the contrary, prefer dry commons and wide extended plains, and feed on insects appropriated to these localities; while those which belong to humid and wet lands are the particular food of the Wag-

tails and Titlarks (*Motacillinæ*); lastly, the *Parianæ*, or Titmice, search with the greatest assiduity among the buds and tender shoots of trees, and thus destroy a host of hidden enemies to vegetation. The natural distribution of this family is thus marked by peculiarities of habit, no less than by a variation of structure adapted to such habits.*

The Warblers are distinguished for gracile and elegant form, and for a (comparatively) delicate structure of bill; it is slender, straight, having the under mandible much thinner than the upper. It is rather widened at the base and slightly depressed; tapers to the point, where it is somewhat compressed, and in some species deflected and emarginated; the *rictus* is sometimes armed with bristles. The wings in most of the species are very short and rounded; and the legs and feet are rather long and slender. The toes are more adapted for perching than for walking, but the birds are well known to frequent the ground, and some of them habitually do so. Although their plumage is not equal to that of some other birds in the brightness of its colours, yet there is a softness in its subdued tints and general appearance that is extremely beautiful; and there is also a gentleness in the manner of these birds which bespeaks their innocuous habits, and renders conspicuous their more striking qualities.

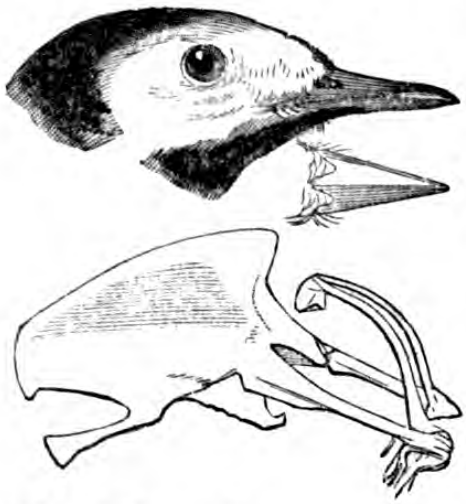
The Warblers are chiefly insectivorous in their diet; some of the species, however, occasionally feed upon fruit and berries.

Of the family *Sylviadæ*, the *Motacillinæ*, or Wagtails, form the most aberrant group. Like the genus *Cinclus*,

* Nat. Hist. and Classification of Birds.

they obtain their food in the vicinity of water; like them also, their tail is constantly in motion. The bill is also rather slender and very straight, and the feet are long and formed for walking, the lateral toes being of equal length.

The Wagtails are purely insectivorous birds. Their habits are well exemplified by the few species that are distributed so generally over this country. They live almost entirely on the ground, and run with considerable swiftness. There are few pools or streams in any part of the British Islands, about which the Pied Wagtail may not be seen during the summer; its haunts and habits are, however, well known.



The Pied Wagtail of England is a perfectly distinct species from that so common in France and other parts of the Continent. This fact is said to have been first discovered by Mr. Gould. It is not unlikely that this is the true *Motacillina alba* of Linnæus; certainly it is that of the modern continental ornithologists. Mr. Gould says that Norway and Sweden are the only parts of Europe, besides the British Islands, where he has been able to procure specimens identical with our British bird; whence he concludes that its range is very limited. He then observes that the Pied Wagtail of England is somewhat more robust than the continental bird, and when in full summer dress, has the whole of the head, chest, and back of a

deep black; while in the White Wagtail of France, at the same season, the throat and head alone are of this colour, the upper surface being light ash-grey. In winter the two species are more nearly alike in their colouring, and this circumstance is more probably the cause of their having been considered identical.

One of our annual summer visitors is the Yellow Wagtail (*Budytes flava*), which generally resorts to extensive pastures and open commons, where cattle or sheep are grazing, and has obtained on that account the generic name of *Budytes*, or Cattle-attender. The flight of these birds is accomplished by jerks, by risings and sinkings, which at every pause require muscular action to set them in progress anew; this mode of flight appears to preclude long-continued exertion, and it may be doubtful whether they employ it in their migrations. The mode of life assigned to these creatures, says the author of the "Journal of a Naturalist," requires great activity of body; for living solely upon insects and winged animals, they are constantly capturing or pursuing, and their length of tail, which is perpetually in motion, seems to aid and balance the operations of the body. In the evening, when the winged creatures are at rest, or, from the state of the atmosphere, in repose, the Wagtail resorts to the pastures, feeding under the very bodies and noses of the cattle, which now become the starters of his game, which, moving from the animal, are captured by the bird. Being drowsy, and settling almost as soon as disturbed, the prey would escape were the Wagtail less nimble in his actions, for he does not appear to perceive the insect, except when it moves.

In autumn, continues Mr. Knapp, when their broods are united with them, they assemble in large parties towards the evening, preparatory to their nightly roost, selecting low-spreading bushes hanging over the pool, or as near the water as they can, and thus become secure from capture by nocturnal vermin. Being in full beauty at this time, the fine yellow breasts of the male birds render them very conspicuous as they glance about the dry parts of the pasture.

This species has no musical powers, but only utters a sharp, shrill note, when flying from place to place, or in active motion on the ground. The nest is formed of moss and bents, or dry grass, and lined with hair. It is generally placed in open fields of grass, or sometimes in corn and peas; but we have known a pair build their nest for two years in succession in the south porch of a pretty village church, in the recess upon the wall, under the angle made by the rafters resting on the outside of it. That they should build there was not surprising, since it was so perfectly retired, and had they not made much litter in the construction of their nest on the floor of the porch, they would probably have remained undisturbed; but the keen eyes of bird-nesting boys were thus led to discover their retreat, and no sooner was the nest filled with eggs, than it was removed, greatly to the annoyance of the clergyman on whose lawn, closely adjoining, the parent birds were continually in pursuit of their food. Here they constantly attracted admiration, on account of their rich colours and perpetual motion; and, strange to say, notwithstanding the abduction of their nest, they reappeared in their old haunts, and built again in the first lo-

cality, to undergo the same deprivation of the fruits of their labour. The eggs are from four to six in number, and of a wood-brown colour, marked with reddish-brown spots, distributed equally over the whole surface.

The claw on the hind toe of some species of the *Motacillinæ* is considerably elongated, a character which is prevalent in the genus *Anthus*, or the Pipits, which appears to follow next in the scale of soft-billed birds. The Pipits are slender-shaped birds, having the plumage and long hind toes of the Larks (*Alundinæ*), a family of the conirostral tribe, but with the slender bill of the Wagtails. Some of the species exhibit a certain degree of musical power in their voice, although none of them are highly gifted in this respect. The Pied Wagtail has a pleasing modulation of tone, but its song is short and weak. The Meadow Pipit (*Anthus pratensis*) has, likewise, a song, though not very powerful; and the Tree Pipit (*Anthus arboreus*) has a sweeter and more varied strain, which it utters either on the wing or whilst perched on the top of a tree: in the former case, it only sings on its descent, having mounted to some elevation in the air from the tree-top. It descends in a sliding manner, with the wings expanded and raised, but motionless, singing sweetly till it arrives again at its perch.

We may now consider the habits and character of the sub-family *Saxicolinæ*, or Stone-chats, its junction with the *Motacillinæ* being effected, in the opinion of Mr. Swainson, by the genus *Gryllivora*, and the species *Gryllivora longicauda*, or Long-tailed Locust-eater. The Stone-chats pursue their prey principally upon

the ground. Their legs are long and muscular; while the bill, as in all birds which live upon winged insects, is broad at the base, and provided with weak bristles, to confine the struggles of the prey. The *Saxicolæ* are, properly speaking, restricted to the old continent. We have three examples of the group in England, viz., the Wheatear, the Whin-chat, and the Stone-chat.

The Stone-chat (*Saxicola rubicola*) is the only bird of the genus that is resident in this country. It presents the following characters: viz., bill broad at the base, compressed on the sides, the tip inflected, and distinctly notched; wings moderate; the first quill spurious; the second slightly shorter than the three next, which are equal and longest: tail short. The tarsi are rather long, and the lateral toes unequal in length.

It is to open, dry moors or commons, where furze or other bushes abound, that the Stone-chat resorts; it appears partial to the former plant, and usually constructs its nest at the bottom of one of these bushes. It takes its station on the uppermost spray of the bush, and should any intruder approach within its precincts, it utters the clicking note which is peculiar to the genus. It appears the warder of the brake, and is the first bird to attract your attention on entering the cover; he sounds the alarm, immediately the brake is hushed, and the other birds silently conceal themselves within the bushes. Worms and small insects are the food of the Stone-chat, taking the latter occasionally by short flights, and returning, like the flycatchers, repeatedly to the same spot. When pass-

ing from bush to bush, it generally flies close to the ground. The male, in the pairing season, has a pleasing though not very varied song, generally uttered while the bird is hovering over the furze. It is rather a handsome little bird, and is rendered conspicuous, not only by the station it chooses to occupy, but by the contrasted colours of white and black upon its head and neck. It commences nidification very early in the spring. The nest is composed of moss and dry grass, lined with hair and feathers; the eggs, which are five or six in number, are of a greenish-blue colour, marked at the larger end with small reddish-brown spots.

The Whin-chat and the Wheatear only resort to this country to breed. The habits of the former (*Saxicola rubetra*) resemble considerably those of the Stone-chat, but it is a smaller bird, and sings more frequently from the perch; the song has much more power and melody than the last-named bird, and it resorts more to cultivated ground. Its nest is constructed with careful consideration for concealment, in a furze-bush or tuft of tall grass, but more frequently in the former. The eggs are bluish-green, and sometimes exhibit faint spots of reddish-brown towards the larger end. Though somewhat similar, the colours of the Whin-chat are not so boldly contrasted as those of the Stone-chat. The feathers on the upper parts are black, margined with rufous brown; from the upper mandible a broad white streak passes over the eye, on each side, to the back of the head, where it almost meets; from the chin another white streak passes down each side of the neck; the throat, breast,

and sides light ferruginous; belly and under tail-coverts white, tinged with the same. On the wing, near the shoulder, is a patch of white, and a smaller one of the same colour on the greater coverts of the primaries; legs and bill black.

The Wheatear (*Saxicola œnanthe*) is a much more abundant species than any of the other chats. It arrives in this island at least a month earlier than the bird last described, and is soon scattered over the wild and half-cultivated parts of the country. It resorts to naked uplands, warrens, and stone quarries, where it breeds. It does not frequent the rich meadows, as it has not the lengthened hind claws of the lark to enable it to run with ease over the verdant grass, and it is therefore found on more naked lands, on downs, or other elevated portions of the surface, where worms and insects may be found in sufficient abundance to support the numerous individuals that annually resort to this country. The nest of this species is constructed beneath some stone or clod, or between the interstices or crevices of a stone quarry, where it is so artfully concealed, that it is seldom discovered. The brood being hatched, and the young sufficiently matured, the birds commence their migration southward, and collect principally on the South-downs, or other prominent, well-defined localities, arriving there in small, scattered detachments, preparatory to their finally leaving the kingdom.

On their arrival in this country, the upper plumage, excepting on the rump, which is white, is of a bluish-grey colour; the wing-coverts and quill-feathers being dusky, or nearly black; the two middle tail-feathers

and the tips of the others, with a patch extending from the base of the bill over the ear-coverts, also black. The colour of the upper plumage assumed at the autumnal moult is a delicate greyish-brown, the tail-feathers being tipt, and the wing-feathers broadly edged and tipt with bright chestnut. Each feather on the back is grey at the base, and merely edged with a brownish margin, which wears off towards the spring; it is thus that most birds are provided with an extra covering during the winter, and that the colours of their plumage preserve their brightness and purity against the spring of the succeeding year.

The Wheatear has very much the manner of the Redbreast when upon the ground, it perches upon clods, or rails and stones, and its progress is effected in a manner very similar to that of the Robin; on perching upon a stone or clod, it will depress its head, and quickly elevate it again, darting a hasty glance around. It is a timid bird, however, and has not the pertness of the Robin. Its flesh is considered a great dainty. Immense numbers of them are annually caught by the shepherds on the Sussex Downs, by a simple species of trap, formed by cutting out two clods of turf at right angles to each other, in the shape of the letter T; one of the clods is inverted, and placed across the largest groove or cavity, beneath which is a horsehair noose, pendent from a piece of stick, which had been previously fixed across the groove; the timid bird seeks shelter or a hiding-place beneath the inverted turf, and is caught by the neck, its struggles to extricate itself only tending to tighten the noose. At this time the birds are plump and well-

flavoured. The song of the Wheatear, though sweet, is audible only at a short distance.

Here we must place the Redbreast, known to our continental neighbours as Rouge-gorge. This beautiful little bird, so familiar in its habits, constantly resides in our island. In some parts of the continent of Europe, as in Norway and other northern districts, it is migratory, always going southward as the winter draws near. This species is an universal favourite, and has in nearly all countries received some name which denotes endearment and attachment. With us, as all know, it is called Robin Redbreast, and seems to place unlimited confidence in man. When the weather is severe, it does not hesitate to seek shelter in our houses, entering by the open door or window, feeding itself fearlessly, and going and returning without any apprehension of danger. Nor is its confidence misplaced; for there are few indeed who would not address this bird in the words of Langhorne:—

"Little bird, with bosom red,
Welcome to thy humble bed!
* * * * *
Daily near my table steal,
While I pick my scanty meal.
Doubt not, little though there be,
But I'll cast a crumb to thee;
Well rewarded, if I spy
Pleasure in thy glancing eye:
See thee, when thou'st eat thy fill,
Plume thy breast, and wipe thy bill.
Come, my feather'd friend, again,
Well thou know'st the broken pane;
Ask of me thy daily store."

When the chilly air of autumn indicates the ap-

proach of winter, then the Redbreast leaves the woods and thickets, and seeks for food and shelter near our houses, and pays to us his annual visit. He enters the peasant's thatched cottage as a friend. Wordsworth has recorded an incident of this kind:—

"Driven in by Autumn's sharpening air,
From half-stripped woods and pastures bare,
Brisk Robin seeks a kindlier home.
Not like a beggar is he come,
But enters as a looked-for guest,
Confiding in his ruddy breast,
As if it were a natural shield
Charged with a blazon on the field,
Due to that good and pious deed
Of which we in the ballad read.
* * * * * *
Thrice happy creature! in all lands
Nurtured by hospitable hands:
Free entrance to this cot has he,
Entrance and exit both, *yet* free;
And when the keen unruffled weather,
That thus brings man and bird together,
Shall with its pleasantness be past,
And casement closed and door made fast,
To keep at bay the howling blast,
He needs not fear the season's rage,
For the whole house is Robin's cage."

In Germany he is called Thomas Gierdet; in Norway, Peter Ronsmad; and in Sweden, Tomi Liden. In the spring-time of the year the Redbreast leaves the immediate neighbourhood of our dwellings, and takes up his abode in the wood, the copse, the shrubbery, or the shady garden, where, when butterflies come forth in the bright sun, he may be seen in full chase, to the astonishment of those who regard him with such kind and gentle feelings. Wordsworth asks,—

"Art thou the bird whom man loves best,
The pious bird with the scarlet breast,
Our little English Robin;
The bird that comes about our doors
When autumn winds are sobbing?
Art thou the Peter of Norway boors?
Their Thomas in Finland,
And Russia far inland?
The bird who, by some name or other,
All men who know thee call their brother,
The darling of children and of men?
* * * * * *
What ailed thee, Robin, that thou could'st pursue
A beautiful creature,
That is gentle by nature?"

It is in such places that the Robin and his mate build their nest, concealing it amid dense foliage, sometimes selecting a hole in a mossy bank, now among the roots of trees, or in the crevice of an old ivy-covered wall:—

"Humble is his home
And well concealed; sometimes within the sound
Of heartsome mill-clack, where the spacious door
White dusted tells him plenty reigns around,
Close at the root of briar-bush that o'erhangs
The narrow stream.
Oft near some single cottage he prefers
To rear his little home."

The eggs of this bird are of a pale yellowish-grey, with countless spots of reddish-brown.

By this, our familiar little Robin (*Erythica rubecola*), we are conducted to the Redstarts (*Phœnicura*), a genus in Mr. Swainson's sub-family of *Philomelinæ*, or Nightingale-warblers, containing the Nightingale, the Reed and Sedge-warblers, and many other of our summer visitors.

The species of Redstart which is most plentiful in this country, during the summer, is the *Phœnicura*

rutacilla. It resorts usually to more solitary situations than those frequented by the Robin, being addicted to rocky crags, ravines, and precipices, where it builds its nest secure from intrusion. Its nest is often also constructed in old walls and trunks of trees; and the bird is frequently seen about gardens, orchards, and shrubberies, not seldom building its nest in places that we should scarcely expect so timid a bird to select for that purpose.

The Red Warbler, or Red Robin, as this bird is sometimes called, procures its food in a different way to the Redbreast. It feeds, says Mr. Mudie, much less upon worms or any other prey that it can hop after on the surface of the ground. It hops more up and down for short distances in the air than the Redbreast does, and it is for the purpose of enabling it to do this that it has the more powerful action of the tail, which member is larger and stronger in proportion. It has a sweetly plaintive little song, but it scarcely merits the appellation of "Wall Nightingale" (*Rossignol des murailles*), by which Buffon designated it. The song is uttered from the perch, on a ruin, a tall post, the trunk of a blasted tree, or some other situation from which it can look around; and one who has heard the plaintive strain of the Redstart, observes Mr. Mudie, from the top of a ruined abbey, or crumbling fortalice, would be inclined to call it the bird of decay, rather than the "Wall Nightingale."

As is the case with most of the other Warblers, continues this entertaining writer, the Red Warbler lands on the eastern portion of the south coast of England. The flight of these migrants is rather from

the south-east than from the meridian, by the valley of the Seine rather than from Brittany; and they do not land much further to the west than Dorset, and, indeed, chiefly in Kent, Sussex, and Wilts, and partially on the east coast, as far as about Yarmouth. The high grounds in the midland counties divide them, and the eastern divisions are in a great measure stopped by the heights in Yorkshire, or on the borders of Scotland. The western divisions, which are fewer in number, pass by the valleys of the Severn and Dee; and as the climate is more humid and productive of insects in Westmoreland and Cumberland, than on the corresponding parts of the eastern coast, they straggle further in that way, and, though interrupted by the hills in Dumfries and Galloway, some of them gain the valley of the Clyde, and probably pass that way into Lothian, and even further to the north. Of course, these observations do not apply equally to all the Warblers, but they do apply to the Redstart, which follows the line of the stony places on the margin of the rich lands; and, unless there are decaying trees, it avoids the level and dry plains.

Its food consists of insects and larvæ, especially the larvæ of coleopterous insects, and the other tenants of crumbling stone or rotten wood. When these are thinned by capture, maturity, or drought, the birds (which have generally then reared their broods) come to the gardens, and gather soft berries and other summer fruits. Insects are, however, the principal food of these birds.*

* Feathered Tribes of the British Isles.

1. Black-Cap.

2. Nightingale.

The Nightingale and other Warblers.

Sylviadæ.

That queen of song, the Nightingale (*Philomela luscinia*), now claims our consideration. This bird is so famed a songster, and has been such a general favourite with the poet as well as with the lover of nature and a country life, and has been the theme of so many writers, both ancient and modern, in prose and verse, that it may seem to require special notice in every work that professes to treat of ornithology. We shall therefore give a somewhat lengthened account of its natural history, interspersing it with some remarks on the general character of its song as compared with that of other song-birds.

The generic name of *Philomela*, which was that given to this bird by the ancients, has lately been restored by Mr. Swainson, and is well applied to the bird which loves the gloom and quiet of moonlight, as well as, or it may be rather than, the glare of the busy day; the term being derived from two Greek words, which together signify a lover of darkness or gloom. Whether it selects the early morn or dewy eve to display its powers, in order that the delicious melody may be more appreciated when heard, unaccompanied by any but its own species, or whether its consciousness of superior melody and its pride of song induce

it to be silent when other less melodious throats are tuned, cannot be ascertained with accuracy, unless some ardent ornithologist may give to the world his remarks on the phrenological bumps upon the cranium of the Nightingale; for it appears to be the opinion of some ornithologists that the character and disposition of the bird, as well as those of the human being, are to be ascertained by reference to significant irregularities on the surface of their crania. The Nightingale does not appear, at all events, to be partial to the chattering notes of other birds, for it has been observed that the chatter of the house Sparrow puts an immediate stop to the music of the Nightingales, even while the Nightingales are in the woods, and the Sparrows on the housetop.*

The Nightingale resorts to this country for the purpose of nidification. It arrives early in April and departs in September, not in families, but, it is generally believed, singly. A few very rare instances have been recorded of this bird remaining through the winter in the southern counties of England. The poet Cowper addresses some stanzas to the Nightingale, which he heard singing on New Year's Day, 1792; and Mr. Newman, in the "Magazine of Natural History," relates that, "on Dec. 12, either in 1823 or 1824, he heard the Nightingale singing clearly and distinctly, although not very loudly, at Godalming, Surrey;" and he remarks that, in the same neighbourhood, he has frequently seen the Nightingale in October, and once in November.

This bird arrives in Surrey very early in April.

* British Cyclopædia.

The writer just quoted says that "he heard it for many following years on the 12th of April. The neighbourhood of Godalming has been called the Valley of Nightingales, and well it deserves the name; throughout the fine nights in May there is a complete chorus of these birds; every coppice contains numbers, and every garden two or three pairs; it is really glorious to listen to them in a moonlight midnight, after a showery day. There is a stile under Ockford coppice, at the back of the town, on which I have sat for hours, listening to the hundred-tongued harmony, interrupted now and then by the sharp cry of the Screech-owl, as on noiseless wing he wound his way along the meadows mouse-hunting, or the harsh chatter of the Sedge-bird, or the *craik craik* of the Daker calling to his mate. The song of the Nightingale has been a favourite theme with poets in all ages, and none of them have exaggerated its sweetness or its variety."* All who have resided in the beautiful neighbourhood of Godalming can fully appreciate Mr. Newman's enthusiasm when writing about this exquisite songster, and those who love Nature in all her works can sympathise with his feelings when moved by the sound of the Nightingale's liquid notes, heard amid so much picturesque beauty as is found in that vicinity; the very mention of such recalls the genial evenings of the merry month of May, and brings before the mind's eye the rich scenery of Hurtmore Vale, and the pellucid waters of the Wey, gently murmuring as they flow onward in their devious course, and the enchanting notes of these favourite birds

* Natural History of Godalming.

falling on the ear with sweetest melody, enriched rather than impaired by the occasional sound of the harsh voice of the Night-jar, which, like itself, is a migrant native of the valley of the Wey.

The male Nightingales arrive at least ten days or a fortnight before the females. If the weather prove favourable they sing out immediately on their arrival in the woods. Then is the time, as Mr. Blyth observes, to hear them to the most advantage, for the song slackens, at least is only delivered at intervals, after they have paired. Towards the close of May it is heard gradually less and less frequent, till it ceases altogether; and, in general, it is continued for a longer period by night than by day. They sing much more frequently at midnight than in the evening; about eight or nine o'clock not a single Nightingale will perhaps be heard, when an hour or two afterwards all is music. This opinion is no doubt justified by Mr. Blyth's experience, but ours leads us to think that it is not universally correct. We have heard the Nightingale singing incessantly, or nearly so, in more than one locality favoured with their presence, throughout the evenings of May, not discontinuing their melody till long after midnight. Some are inclined to think that their song is, in some respects, dependent upon the quantity of light which their retreats admit. In the course of an evening's walk, in paths now skirting the base of a lofty hill, anon rising upwards to half its height, then passing through hollow lanes, all more or less shaded by hazel copses or the thick foliage of lofty trees, and occupying from six to nine o'clock, we have noted the song of from twelve to twenty dif-

ferent Nightingales filling the air with their liquid music; and, again, at the still hours of from ten to twelve o'clock, when the moon has shed forth her brightest beams, the charming melody was heard uninterrupted by a single discordant voice.

The music of the Nightingale, observes Mr. Blyth, is rarely heard after the first or, at latest, the second week in June; but it appears, from Montagu's experiments, that if the hen bird be taken from her nest, the male bird will resume his song, and will continue to sing till very late in the summer, or until his notes have attracted another mate. From this, therefore, it follows that the Nightingale does not lose his power of voice at midsummer, as some have stated; and we might consequently infer, with Mr. Knapp, that the true reason why this bird always ceases his melody at this period is, that his time is now wholly occupied in procuring food for his young family; but as it is well known that caged Nightingales, which have no nestlings to provide for, invariably discontinue their song at precisely the same time with the wild birds, we must, of course, endeavour to assign some other cause for its silence. Probably the change which then takes place in its whole system, preparatory to the autumnal renovation of plumage, affects the Nightingale more immediately than most other birds, and requires the exciting cause of being in want of a mate to counteract it.*

At all seasons the Nightingale is a solitary and pugnacious bird, exhibiting considerable hostility to any of its species that happen to invade its own

* On the Natural History of the Nightingale, *Analyst*.

selected haunt. The Redbreast, it is well known, is somewhat similarly disposed, and the Nightingale indicates a further resemblance to this bird, in the habit of two or three often singing against each other; not warbling simultaneously, in the manner of Linnets and others, but each replying to another's strains.

The characteristic trait of the Nightingale's song (we cannot do better than adopt the words of Mr. Blyth) consists in his very superior powers of execution. He has an endless variety of inimitable rolls and quavers, all of which are delivered with a perspicuity and richness of tone quite peculiar to himself. No verbal description, however, will convey a definite idea of the musical powers of this bird; he must be heard to be duly appreciated. As he is the finest, so, when in full song, he is the loudest minstrel of the woods, to whose powerful music all the rest are a mere accompaniment; and in the silent midnight, when nought else breaks the calm and universal stillness that prevails, save, perhaps, a cold, chilly breeze at intervals rustling through the dry dead leaves that, curled up and crisp, still loosely attach to the vigorous and sturdy branches of the oak, his clear, soft, plaintive swells, loud shakes, and sudden cadences, re-echoed all around by other rival songsters of his race, form a soft and witching concert from the moonlit woods, that stirs and elevates the very soul to harmony.

The Nightingale's song invariably improves upon acquaintance. At first, all are surprised by it—astonished at the volume of his voice—and some hardly know even whether to like it, so different does it prove from what they expected. The Nightingale has

no flourishing liquid melody, like the pure sweet note of the Blackcap, nor does he try to emulate the rich, deep, flute-like music of the Blackbird and Garden-warblers; but he excites our admiration by the wonderful variety of his tones, by that perfect command and compass of his rich and powerful voice, which enables him, without seeming effort, to articulate the most delicate and complex passages; he moves our wonder "by the infinitude of resources of his incomparable organ—brilliant bursts, lively, delicate trills, volleys of rapid notes, whose distinctness equals their volubility; an internal, dull murmur, not itself pleasing to the ear, but very fit to enhance the brilliancy of the more agreeable strains; sudden and rapid runs, articulated with strength, and even a tasteful ruggedness, plaintive accents, and tender cadences."*

The windpipe of birds, as may naturally be supposed, is very different in structure from that of other animals, and in song-birds is peculiarly and admirably adapted to that sweet and varied music with which we are so often delighted in the woodlands. The whole extent of the windpipe in such birds may be regarded as one vocal apparatus. Birds, of all animals, Mr. Kirby observes, are best organized with regard to their voice. Besides the upper larynx, or throat, which they have in common with mammalians, at the base of their windpipe, where it divides into two branches, conducting to each lobe of the lungs, it has also another larynx, forming a second vocal apparatus. This is produced by a contraction of the organ

* Buffon.

furnished with muscular fibres, or vocal strings, which, by their various tensions and relaxations, modify greatly the tones of the voice; ascending also in the tube of the windpipe to undergo another modification at the upper larynx, which, as it were, add the horn to that of the reed. The modification of sound is principally produced by the expansion and contraction of the windpipe, and by the strength of the muscular fibres by which such is effected. The volume of air which birds are capable of introducing into their bodies, observes a French naturalist,* and the force with which they can expel it, offers the only explanation how so small a creature as a singing-bird (the Nightingale, for example) is able to utter notes so powerful, and, without any apparent fatigue, to warble so long and so musically.

Baron Cuvier found in all singing-birds four pairs of constrictor muscles, namely, two pairs before, two behind, two small, two oblique, and two transverse, while in most birds which do not sing there is in general only one pair. The vocal organs (*larynx*) of the Nightingale are fibrous and muscular in an astonishing manner, though in other respects they do not differ from those of other birds. It may therefore be concluded that all the power and variety of its notes are produced from the innumerable fibres by which the vocal chord (*glottis*) is either tightened or relaxed, projected forwards or drawn inwards, and bent in every direction. The tongue, which is very short in the Nightingale, may have considerable influence in modifying the sound of the voice; and from its various

* M. Jacquemin.

peculiarities of form, position, elasticity, and movement, it seems to constitute an essential part of the apparatus of the voice, independent of its office of contracting the vocal fibres.*

There appears to be a peculiarity in the migration of the Nightingale which may account for its non-appearance in certain parts of this country, namely, Devonshire, Wales, and Ireland, and the greater part of Scotland. Mr. Blyth observes, that Nightingales appear to migrate almost exactly parallel to the lines of longitude; and this he considers to be the reason why these birds are nowhere found, except as rare and accidental stragglers, beyond the third meridian of the western longitude. From other districts they are cut off by the character of the soil, as they avoid everywhere both the rocky ground and fen. They are found chiefly upon the chalky, gravelly, sandy, and sometimes upon the clayey soils, frequenting the richer wooded districts, more particularly when these fringe the banks of rivulets or canals; not that it has any partiality for the water, but only for the rich and close vegetation which is found in such situations, or, perhaps, rather for the insect food with which such places abound. Soft caterpillars and soft insects are the principal food of the Nightingale; and these are always abundant in proportion as, with an equal store of vegetation, the place or the season is dry. Their subsistence is chiefly sought for upon the ground, where they devour a considerable number of the grubs of beetles, ground-spiders, and the smaller ground-beetles.

Nightingales have been observed by Sonnini and

* Habits of Birds, *Library of Ent. Knowl.*

others to winter, in considerable numbers, in the thickets of the Egyptian Delta. They arrive in Italy generally during March, and in the centre of Germany about the middle of April. Those which visit England probably cross from Africa into Spain, pass through the eastern provinces of that kingdom, penetrate through France, having surmounted some of the passes of the Pyrenees, and cross the Channel chiefly at its narrower or eastern limits. They arrive in this country, should the weather be favourable, about the second week in April, and generally reach the extreme limit of their migration before the middle of May. They depart southward early in September. The nest appears to be generally placed upon or very near the ground. Its form is simple and inartificial, dry leaves on the outside, hay in the inside, and fine root-fibres, with the hair of animals, are all the apparatus. The female lays from four to six eggs, of a brownish-green colour, on which she sits for a fortnight.

The birds which form the genus *Philomela*, and of which the Nightingale is an eminent example, differ from the following nearly allied genus *Curruca*, in having the bill wider near the gape, and less compressed towards the tip. Their legs are also longer, and the feet not formed so expressly for perching.

Of the genus *Curruca*, the Blackcap (*C. atrocapilla*) and the Garden-warblers (*C. hortensis*) furnish familiar examples. In general, the birds of this genus, says Selby, possess sweet and varied notes; some species, indeed, almost emulating in their warblings the richness and power of the Nightingale. They feed upon in-

sects and larvæ, and are very partial to the smaller soft fruits and berries.

The Blackcap (*Curruca atrocapilla*) is one of those birds which visit this country only during the warmer period of the year. Its arrival is hailed with delight, as it tells of pleasant summer days that have passed, and indicates the near approach of others yet to come. It is the harbinger of sunshine and flowers, of lengthened days and genial warmth. The very same bird that, with its sable crest erect and throat extended, caused us so much delight the previous year by its rich and sonorous song, again returns to the selfsame tree, and proclaims its presence in its loudest notes. The grateful sound is recognised as that of an old and faithful friend who brings us news of coming joy and pleasure.

Another welcome visitor to our hedges, furze-covered commons, and thickets is the Whitethroat (*Curruca cinerea*). This species is much more numerous, and more equally dispersed than the Blackcap. It arrives on our shores at the same time as the other Warblers, early in April, and leaves them again about the latter part of September. It possesses a pleasing but cursory song, frequently uttered upon the wing, as it rises from the sprig on which it had been perched to a considerable height in the air, and descends slowly to the same spot from whence it had taken its departure. In executing this movement its flight is very peculiar, and must have attracted the attention of all persons who have walked within the shade of a wild hedgerow in summer. It is an extremely lively and active little bird, almost perpetually singing, and ever erecting the

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feathers upon the throat and crown of the head, which gives it a remarkably characteristic appearance. It builds amongst brambles, nettles, or other tall weeds. The nest, like that of its congeners, is of frail and open texture, composed of withered stems of the goose-grass (called *cleavers*, from the manner in which the seeds attach themselves to our clothing) *Galium Aparine*, sometimes having a few hairs intermixed with them. The eggs are four or five in number, of a greyish-white, speckled with wood-brown and grey. Insects and their larvæ form the principal food of the Whitethroat; but in the latter part of the summer it is a destructive visitor to gardens, being, as Mr. Selby observes, particularly fond of cherries, currants, and other small fruit.

The Sedge-birds and other aquatic Warblers form the genus *Salicaria* of Selby. The birds of this genus, observes that accurate ornithologist, are the inhabitants of reedy marshes and of low damp underwood, where they live concealed, seldom appearing upon the upper or exposed branches, but confining themselves to the closest part of the bushes or herbage. Through such entanglements the form of their feet, long sharp claws, and narrow depressed foreheads enable them to pass with astonishing dexterity and quickness. The tail is rather long and rounded. Some of the species possess considerable compass of voice, and a great variety of notes, though many of them are harsh.

About the middle of April the Sedge-warbler (*Salicaria phragmitis*) arrives in England, and silently, but in considerable numbers, takes possession of the sedgy and reedy banks of streams and pools, of osier holts,

and of shrubs and bushes on the edges of marshy and moist places. In such situations it may be heard during the whole day, and even through the greater part of the night, pouring forth its interrupted though unwearied song, which consists of a great variety of notes, most of them guttural, and delivered confusedly and with great rapidity. In general it remains concealed from view in the closest reeds or bushes, but will sometimes sing perched on the very top of a small branch, or warble in its flight (which on such occasions is very peculiar) from one station to another at short distances. It has been remarked of this bird that, when silent, it immediately commences singing on being slightly disturbed, by a stone, for instance, being cast into the bush where it sits concealed.

This bird builds amongst the tall aquatic plants in which it chiefly resides and finds its food, often suspending its nest between three or four of the closest adjoining reed-stems. The materials of which it is composed are soft moss, vegetable fibres, and occasionally a few hairs, and fine dry grass in the interior. The eggs are five in number, of a pale wood-brown, speckled with darker shades of the same colour.

In the sub-family *Sylvianæ* are contained some of the most diminutive species of the Warblers. In this group the delicate form and peculiar features of the SYLVIADÆ are carried to the greatest extent. The size of these birds, in general, is small, and the structure weak, the bill being very slender and straight, depressed at the base, and slightly compressed towards the tip, which is a little deflected and pointed.

It is amongst the leaves of the slender twigs at the

extremities of branches that these little birds seek their food; and the delicacy of their frame, their quick and nimble movements, and the keenness of their vision, render them eminently adapted for such an office, and enable them to hunt over the very extremities of the topmost sprays with the greatest safety to themselves, and the certain destruction of their tiny prey, for should the latter attempt to escape by means of flight, the agile birds can capture it, in the manner of Fly-catchers, on the wing.

The tiny Gold-crests and Willow-warblers are familiar and interesting examples of the genus *Sylvia.*

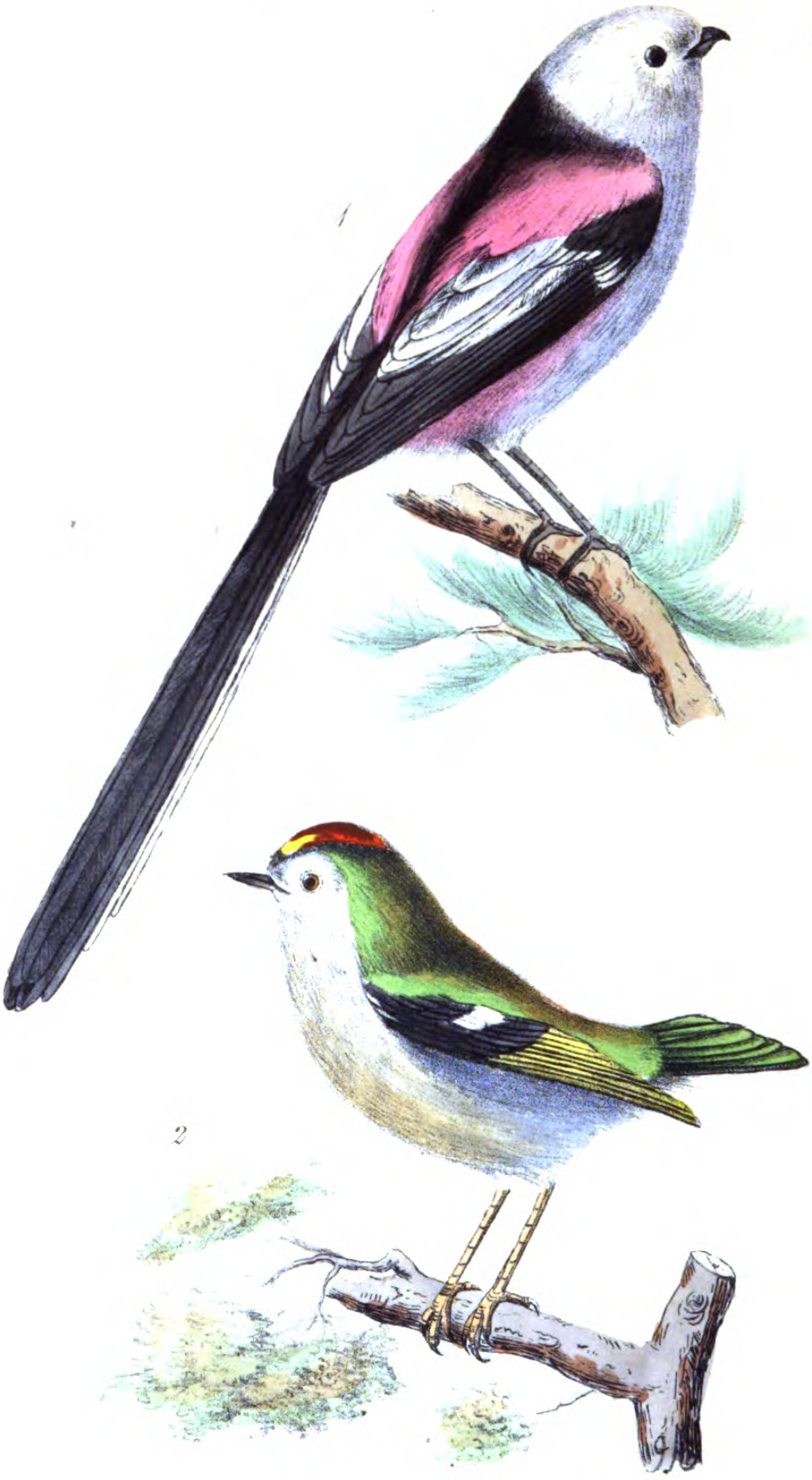
Mr. Sweet observes of the Yellow Willow-wren, (*Sylvia trochilus*), that it visits us at the latter end of March or beginning of April, and leaves us again at the end of September or beginning of October. On its first arrival it enlivens our woods and groves with its lively song and gay frolics, flying about from tree to tree, and catching the small gnats and flies that come in its way. It builds its nest on the ground in a thicket, amongst dead leaves and moss, with a covering of the same materials as those lying all around, so that it is impossible to find it without watching one of the old ones to the nest.

This species has obtained the provincial name of Haybird, from its frequently making use of dried grass to form the framework of its nest, in the same way as Whitethroats are called Hay-tits. The same Wren is also called Bee-bird, not from its preying upon bees, which are too bulky for its slender bill, but because it builds a similar nest of moss or

dried grass to the carder-bee, (*Bombus muscorum*).*

These birds are very plentiful in some seasons, flying about from tree to tree, and singing their sweetly soft note, which is not unlike the song of the Redbreast, but not so loud. Wherever plants are infested with any kinds of aphides, there the Willow-wren is always sure to be, often quarrelling and flying after one another; and they will even attack other birds which are much larger than themselves.† This bird is often confounded with the lesser Pettichaps or Chiff-chaff, on account of their general resemblance in colour, as well as habits, to each other; but the colour of the legs is an unerring mark of distinction, being, in this species, of a pale yellowish-brown, while those of the lesser Pettichaps are of a brownish-black. The latter bird is also much smaller. According to Montagu, the Willow-wren does not extend far to the westward, being rarely met with in Cornwall.

* Rennie. † Sweet.



N°1. Long Tailed Tit.
2. Golden Crested Wren.

Goldcrests and Titmice.

The Goldcrests, forming the genus *Regulus*, are very diminutive birds; those which inhabit this country are the smallest species of bird found within our shores. They are very active birds, and in ever-varying motion; and in these respects bear a near resemblance to the Tits, a well-known genus in the sub-family *Parianæ*. Europe, according to Selby, possesses two species of *Regulus*, but only one has been hitherto found in Britain; a third and fourth belong to America; and a fifth to the northern parts of Asia.

That which is found in this country is the Golden-crested Wren (*Regulus auricapillus*), which, though a small bird, braves the rigours of our winter. The length of the body, when the feathers are removed, does not exceed an inch, and the average weight is only about eighty grains troy, so that seventy-two birds are required to weigh a pound. The plumage of the back and upper parts is of a delicate green colour, that of the under parts is brownish-white, with a slight tinge of yellow on the middle of the belly. The wings are prettily varied with black, white, and green. The quills, as well as the tail-feathers, are dusky, with greenish-yellow edges. The crest is the most striking part of the plumage. It is longitudinal along the top of the head, and composed of double rows of feathers, rather lengthened, and of a silky

appearance; the external feathers on either side are deep velvet black, and the internal are bright golden yellow, sometimes displaying a rich orange tint in the centre. The crest of the female is not so bright in colour as that of the male bird; but in other respects she does not exhibit any difference. The young are entirely without the crest till after the first moult, which takes place in the autumn.

These birds are very numerous, as well as very generally distributed. Woods and plantations are their habitual places of residence, but particularly those abounding in spruce, larch, and other species of fir, amongst which they are incessantly occupied in hunting about among the buds and leaves, and the bark of the stem and branches, hanging by the feet in all sorts of positions, and capturing minute insects and larvæ with wonderful adroitness, but always with the wings ready to act and float them speedily through the air to any neighbouring tree that they may desire to search.

The conical and keenly-pointed bill of the little *Regulus* is admirably adapted for digging into the crevices of the young bark, or the hybernacular scales of the young leaves, and bringing out any larvæ or insects that may be lurking there. The pine family are very liable to have the terminal buds attacked by insects, whose punctures let out the substance of the tree, which, instead of swelling the buds and producing shoots, is converted into a powder, and the growth of the tree is checked. The points of the twigs of these trees can scarcely be reached by any other birds; thus the Crested Wrens, small as they

are, are of no little use in the pine-forests, and we find that these forests are their chief places of resort.*

In the spring of the year the male has a kind of song, though extremely feeble, and only to be heard at a short distance. The call-note, or chirp, which they utter when searching for food, is very diminutive, but by no means disagreeable in tone. The nest is an elaborate structure, composed of moss or lichens, interwoven with wool, cobwebs, fine root-fibres, and other similar materials, and lined with small feathers. It is usually suspended beneath the branch of a pine or other fir-tree, the sides being fastened to the pendent twigs from each side of the branch; the entrance is at the top. From six to ten or eleven eggs are usually laid; they are very small, white tinged with pink, and having a brownish hue around the larger end.

Goldcrests are found in North and South America, in the West Indies, in Europe, in Africa, and in India. They are migratory in the northern countries; and, in Great Britain, at the commencement of winter, we have a regular accession of numbers to those which permanently reside amongst us, many of which return northwards in the spring to breed.

We are led naturally, by the last group of birds, to the Titmice, as they are termed, forming the subfamily *Parianæ*. The habits of both the groups are very similar, but the frame of the Tits is considerably more robust; the bill, in many of the species, assumes a conic form, and the feet, in adaptation to their constant habit of climbing, and clinging to the twigs and branches of trees, are particularly strong and muscular;

* British Cyclopædia.

the hind toe, also (upon which all climbing birds depend so much for assistance) is large and powerful. They are principally tree-birds, and are ever assiduously engaged in searching for the eggs or larvæ of insects which have been deposited in the young buds, especially the fruit-buds, and which would commit destructive injury to the tree, were they allowed to continue their depredations. Appointed, as it were, to guard the embryo foliage and blossoms of the trees, during the absence of the Warbler tribes, and the more exclusively insectivorous birds, the Tits appear to watch with unremitting care the tender buds, from the time of their formation in the autumn, till they begin to expand in spring. The bills of the more typical species, or the genus *Parus*, differ considerably from those of insectivorous birds in general, and the birds display some analogy in their mode of using it to the scansorial tribe of hard-billed birds. Their bills are small, short, rather compressed, very firm and strong, and pointed at the tip. The action of the neck is free, and comparatively powerful for the size of the birds; and they strike with the point of a bill as with a pickaxe or chisel. By this action of the bill, observes Mr. Mudie, they can dig very successfully into the crevices of bark, or the folds and hybernacula of buds, and extract thence the larvæ, of which they are such incessant and general destroyers.

The wings are rather rounded, and the quills firm and stiff, the third or fourth being the longest; and in some species the first is merely rudimentary. The tails are more or less produced, square or forked. In some species the tail-feathers are strong and stiff,

so as to form a support to the body, when required, against the trunk of a tree.

Although these birds are of very small dimensions, their disposition is energetic, bold, and courageous. They are capable of enduring all climates and of braving every state of the weather, and their muscular power, both in the way of action and endurance, is greater than that of any other little birds, being well adapted to their bold and daring spirit.

It is amusing to see one of these active little birds engaged in its pursuit after food; it gets from bud to bud, one hardly knows how, for though we must suppose, from analogy, that it can be done only by the wing, yet it is so momentary in the whole performance that the wings are not seen to move. The bird is clinging to one twig this instant, and in another instant it is clinging to another, but how the transition is made there is no time for observing; thus the way in which it may come to the branch is of no consequence, in so far as the sure footing of the bird is concerned. Upwards, downwards, laterally, outwards or inwards, are still the same to the Tit, for it never misses its clutch, and the position in which it may hang to the twig, or whether it hangs by one foot or both seems to be a matter of perfect indifference. Wherever the foot touches it is sure to gain a firm hold, and the instant the foot is detached, the wings are ready to receive the bird, whether the detaching be the result of intuition or of accident.*

These are the general characters of the several species of Tits that are known in this country. There

* British Cyclopædia.

are numerous other species found in different parts of the globe, some of which have the bill depressed like that of a *Muscicapa*, with the rictus bristled as in the *Setophaga* and *Sylvicola*, which are principally residents of the American continent. The *Setophaga ruticilla*, Sw., described by Wilson under the name of American Redstart, has very much the habits of a Fly-catcher, and is, in fact, says Wilson, one of the most expert fly-catchers of its tribe. It is almost perpetually in motion; and will pursue a retreating party of flies from the tops of the tallest trees, in an almost perpendicular but zigzag direction, to the ground, while the clicking of its bill is distinctly heard, and it no doubt catches several of the flies in its descent. It keeps in perpetual motion, observes Audubon, hunting along the branches sidewise, jumping to either side in search of insects and larvæ, opening its beautiful tail at every movement which it makes, then closing it and flirting it from side to side, just allowing the transparent beauty of the feathers to be seen for a moment. It is frequently seen climbing along the trunks and large branches of trees for an instant, and then shifting to a branch, and is in perpetual motion. It is also fond of giving chase to various birds, snapping at them without any effect, as if solely for the purpose of keeping up the natural liveliness of its disposition. It has a variety of notes, clear and pleasing in tone, though not deserving the name of song, which it utters when in search of food. It is found in the interior of forests, the borders of swamps and meadows, deep glens covered with wood; and wherever flying insects abound, there this little

bird is sure to be seen. It migrates in spring and autumn, making its appearance in Pennsylvania from the south late in April, and winters in the West India islands. The length of the bird is five inches. The plumage is blended, soft, and glossy. The head, neck, fore part of the breast, and upper parts black; the head, neck, and back glossed with blue. Sides of the breast and under wing-coverts reddish orange; abdomen white. Quills brownish-black, their anterior half orange, forming a broad transverse band on the wing. Two middle tail-feathers black; the rest black in their terminal half, and yellow in the basal half.

There is so much similarity between some of the species of Titmice and the Creepers (*Certhiadæ*), both in external appearance and habits, that naturalists have experienced considerable difficulty in separating the two families. The Pine-creeping Warbler of America is an instance of this; the habits of which bird are thus narrated by the American ornithologist. The Pine-creeping Warbler, says Wilson, runs along the bark of the pines; sometimes alighting and feeding upon the ground, and almost always when disturbed flying up and clinging to the trunks of trees. They associate in flocks, and are easily known by their manner of rising from the ground and alighting on the body of the tree; they also often glean among the topmost boughs of the pine-trees, hanging head downwards, like the Titmouse; but, notwithstanding the habits of the bird, the tongue is slender, as in the Warbler genus. With the facility of climbing possessed by the scansorial Creeper, which is never seen in flocks, the present species unites the gregarious

habits of the Tits, and builds moreover, according to Mr. Abbott, a pendulous nest; it has the tongue of a Warbler, but the habits of a *Vermivora*, or Worm-eating Warbler, and a *Parus*.

This is a hardy bird, seldom abandoning the most northern of the eastern States until the middle of October. It is a constant resident in the southern districts of North America. The general colour of the upper parts is yellowish-green, inclining to olive; the rump lighter; throat, sides, and breast greenish-yellow, the sides of the latter spotted with greenish-brown; belly white. Wings and tail blackish-brown, with greyish-white margins; the secondary coverts and first row of small coverts tipped with white, forming two bars across the wing. Length five inches and a quarter.

Of all the species of Tits that frequent this country, perhaps the most interesting is the Long-tailed Tit (*Parus caudatus*). It is a very small bird, not exceeding the common Wren in size, and measures in length five inches and a half, of which the tail occupies three. After the second moult, these birds display a roseate tint on the scapulars, which forms a pleasing variety to the white and black of the general plumage. The bill and feet are dusky, inclining to black; the former is short, but appears more so from its base being hidden in the feathers, which project forwards and conceal the nostrils; it is strong and conic, the upper mandible being slightly curved over the under. The legs and toes are rather more slender than those of other Tits; the claws are very pointed and sharp, and the grasp of the foot is amazingly strong. The

lengthened tail is no doubt of infinite service in balancing its little body whilst suspended from the sprays and slender twigs, where the grubs and insects which form its food lie concealed within the buds.

During the autumn and winter, when the hedges and trees are divested of their leaves, the Long-tailed Tit is readily observed passing in small troops along the hedges, or from tree to tree, busily engaged the while in searching every twig and tuft of buds for insect food, hanging often with their backs downwards, and assuming every possible variety of curious and apparently constrained attitudes. It seems, says an elegant and pleasing writer, the most restless of little creatures, and is all day long in a state of progression from tree to tree, from hedge to hedge, jerking through the air with its long tail like a ball of feathers, or threading the branches of a tree, several following each other in a little stream; the leading bird uttering a shrill cry of *twitter*, *twitter*, and away they all scuttle to be first, stop for a second, and then are away again, observing the same order and precipitation the whole day long.

This species appears to subsist entirely upon insect food; in this differing from the other Tits known in our island, which are omnivorous, and will feed, not only on insects, fruit, various kinds of grain, and even carrion, but sometimes also, it has been said, on such young and sickly birds as they can master, the brain being the portion first devoured.

In the "Feathered Tribes of the British Islands," Mr. Mudie offers some interesting remarks on the relative degree of acuteness of vision in the Long-

tailed Tit and some other species; from which it appears that, in all probability, the sight of the Bottle Tit, as the present species is sometimes termed, is more peculiarly adapted for distinguishing very minute objects than that of any other bird; and it is likewise probable that, while the microscopic powers of their vision are in exercise, these birds do not very clearly distinguish any large object, such as the human form, which may be at a short distance from them, except it be in motion, when only they appear to evince alarm at its propinquity.

There are few birds in this island which build a more curious or elaborately-constructed nest than the Long-tailed Tit. It is the shape of its nest that has procured for this bird the provincial name of Bottle Tit. The nest, observes Mr. Mudie, is a structure formed by the patient and incessant labour of both birds for at least a month, even in those places where materials are most abundant, and requiring five or six weeks where these are more scanty. It is placed in the fork of a small mossy tree, or among the thick twigs of a shrub, often of a hawthorn, and sometimes of an evergreen; but it is seldom more than three or four feet from the ground (sometimes, however, it has been observed full twenty feet above the ground), and generally, if not always, more or less within the cover of the sprays. In form it is an elongated spheroid, or rather that of an egg placed on the larger end; and in appearance and texture it is very like a short stump which has become coated over with lichens, and it is as firm in texture as it is neat and regular in form. The main fabric is closely made of moss, taken in very

small pieces and matted together with animal fibre, rarely with wool, as the bird does not range so far from the bushes as to be much of a wool-gatherer, but principally with what may be called tree or bark-silk; that is, not the threads of spiders, either those that are spun for snares, or as gossamer to waft the spinners through the air—for the last of these hardly stand a shower, and the first disappear during winter—but the silken cocoons indiscriminately, perhaps, of the chrysalides of insects and the eggs of spiders, both of which are much less perishable, and consequently much more abundant in the early part of the season, when the birds build.

These materials are firmly interwoven; the moss gives bulk and stiffness, and the silky filaments cohesion; and as the birds are microscopic in their vision, have perfect command over their short bills, and apply these materials by very small portions at a time, the fabric is beautifully put together, and when there are twigs in the way, the nest is so closely worked upon them, that it cannot be removed entire, unless they are taken along with it. Externally it is coated with lichens and liverworts, applied in small pieces, but so close as to hide all the substantive materials, and so firmly worked in that not a bit falls off. The inside is carefully lined with feathers, the tubes or quills of which are worked into the fabric, so that nothing can be felt internally but the down and sides, of which there are several falls, as there are in the clothing feathers of birds. The whole nest, down and all, is lined in this manner; so that the nest, when finished, is equally secure against rain and

change of temperature. The entrance is by an aperture at the side, toward the top of the structure, the feathers around which are so worked into the fabric as, when not pushed aside by the birds, to form a sort of curtain.

The nest is altogether one of the most extraordinary of animal structures. It is built wholly of *gathered materials*, without any secretion of the birds as a cement or otherwise, and owes its compactness to the manner in which the materials are put together; and, in the mere union of its parts, perhaps it is the finest animal structure, independently of living structures, that is anywhere to be met with.*

The eggs, which are of a semi-transparent white, having generally a few reddish-brown specks disposed about the larger end, average about ten or twelve in number, seldom less, but sometimes more.

The Long-tailed Tit retires at night to roost in some thick evergreen, or holly, or spruce fir. The birds arrange themselves in a line along a horizontal branch.

This species is almost destitute of song; but in the spring months it utters, in addition to its usual chirp, a very pleasing, soft, ringing note, very similar to the vernal call of the Blue Titmouse. At other times it has no other call but the usual *twitt'r*, *twitt'r*, which, serving to keep the family together, is continually repeated by the birds as they flit among the trees and bushes.

The Tits are generally considered as mischievous birds, and are persecuted accordingly throughout the

* Feathered Tribes.

country; they merit, however, a different treatment at the hands of man, conducing, as they do, so much to the preservation of the health and beauty of his trees and fruit. They are ever in search of insects, in one form or another, in the teeming buds, or the crevices of the bark or moss. There is no bird which yields more amusement to those who are interested in their movements and watch them, than the Titmouse, when it is thus occupied; their motions are so lively, sometimes running back undermost with the greatest ease.

The note of Titmice in general, though harsh and unmusical, and somewhat resembling the noise produced by filing a saw, is yet, from association, agreeable, being among the very earliest intimations of approaching spring, and indeed it is sometimes heard on mild days in winter, when we are tempted by the fineness of the weather to visit its haunts.

> Sounds inharmonious in themselves and harsh,
> Yet heard in scenes where peace for ever reigns,
> And only there, please highly for their sake.
>
> COWPER.

The Cole Tit (*Parus ater*) is a widely-scattered species, being found all over Europe, particularly where pine-forests are abundant. It is somewhat scarce in England, but plentiful in Scotland, where plantations of pine and fir are common. To such localities this bird appears to confine itself almost exclusively. There it has a safe retreat, and there it finds a sufficiency of food in aphides and the larvæ of insects, as well as seeds and berries. It builds its nest in the hollow of some decaying tree. This is formed of wool and moss, and supplied with a lining

of hair. Mr. Montague says that he "once found one in the barrel of a garden-pump." The bill of the Cole Tit is black, as are also the crown and nape of the neck, the latter having a white central spot; the throat and under part of the neck are black; the back is of a greenish-grey, gradually changing on the lower part into yellowish-grey; the wings and tail are grey; under parts greyish-white; legs bluish-grey.

The Marsh Tit (*Parus palustris*) bears a close resemblance to the Cole Tit, in respect to form and colour, but is of a larger size, and is devoid of the central spot on the nape of the neck. In the north of England it is common. Fifeshire appears to be its limit in Scotland, and seldom is it met with so far south as London. It dwells chiefly among reeds in low marshy lands: there it makes its nest, selecting a decayed willow for its foundation. It feeds for the most part on insects, and in winter, when not content with seeds, it ventures to approach the farmyards in search of meat, which it greedily devours. It possesses a voracious appetite, consuming at times a quantity of food equal to one-half its own weight in one day. The Marsh Tit is known provincially by the names of Ox-eye, Joe Bent, Willow-biter, etc. The movements of this species, when an observer can approach near enough to mark them well, are very interesting. They herd in large flocks, and are continually in motion, going in and out of their nests, feeding their young, flying off in search of food, or hunting for it in the crevices of the surrounding trees. It is perfectly amusing to watch their sprightly movements, and the singular yet graceful positions into

which, as it were by the overflow of their spirits, they are perpetually throwing themselves.

Included in this sub-family is the genus *Accentor*, two species of which are all that are known, and both have been found in this country. One of them is plentifully distributed, and well known by the name of Hedge Sparrow, or Dunnock (*Accentor modularis*).

The quiet, unobtrusive, and confiding habits and demeanour of this little bird are familiar to most persons. It is as unsuspicious of man as the Redbreast, and does not even take the usual precaution of birds in seeking for a hidden site for its nest. As observed in the "Journal of a Naturalist," it is nearly the first bird that forms a nest; and this being placed in an almost leafless hedge, with little art displayed in its concealment, generally becomes the booty of every prying boy; and the blue eggs of the Hedge-warbler are always found in such numbers on his string, that it is surprising how any of the race are remaining, especially when we consider the many casualties to which the old birds are exposed from their tameness, and the young that are taken when hatched from their situation. The same writer has observed that Hedge-warblers are almost always seen in pairs, feeding and moving in company with each other, and may truly, in a double sense, be considered domestic birds.

A nearly-allied species is the Maryland Yellow-throat (*Trichas personata*); one of those nimble inhabitants, says Wilson, of briers, brambles, elder-bushes, and such shrubbery as grow most luxuriantly in low watery situations; and it might with propriety be denominated *Humility*, its business or ambition

seldom leading it higher than the tops of the underwood. Insects and their larvæ are its usual food. It dives into the deepest of the thicket, rambles among the roots, searches round the stems, examines both sides of the leaf, raising itself on its legs, so as to peep into every crevice; amusing itself at times with a very simple and not very disagreeable song or twitter, *whìtititee*, *whìtititee*, *whìtititee;* pausing for half a minute or so, and then repeating its notes as before. It is by no means shy; but seems deliberate and unsuspicious, as if the places it frequented, or its own diminutiveness, were its sufficient security. It seldom approaches the farmhouse or city, but lives in obscurity and peace, amidst its favourite thickets. The nest, according to Audubon, is placed on the ground, and partly sunk in it; it is now and then covered over in the form of an oven, from which circumstance children name this Warbler the *Oven-bird.* It is composed externally of withered leaves and grass, and is lined with hair. The Cow-bunting sometimes deposits its egg in the nest of this bird, as the Cuckoo does in that of the Hedge-warbler in this country.

Chatterers and Flycatchers.

The Chatterers (*Ampelidæ*) stand next in order to the genus *Trichas*. The name refers to the loud and monotonous notes of some of the species. This family is neither numerous in genera nor species, but they are very singular birds, and are remarkable for the beauty and varied colouring of their plumage. They are distinguished from all others of the *Dentirostres*, observes Mr. Swainson, by the enormous width of their gape, which in many extends beyond the eye, and in some is nearly as wide as that of a Goatsucker. The particular use of this structure is at once explained by the nature of their food; they live almost entirely on soft berries and small fruits, which, from being swallowed whole, naturally require a very wide passage to pass down the throat. They are perpetually hopping among fruit-bearing trees, and seem to know by a wonderful instinct the period when each species yields its berries.

The following are the general characters of the family, as given in Mr. Swainson's synopsis. Bill short; base broad; sides compressed; the tip notched, and sometimes hooked. The gape very wide, opening beyond the eyes. Feet short, or long, and very weak; the toes more or less united; the soles flat. This formation of foot gives considerable breadth to the sole, and enables the birds to cling with a firm grasp to slender boughs and twigs.

The Chatterers are chiefly natives of the tropical parts of America, or of the Oriental islands; one species only, *Bombycilla garrula*, or the Bohemian Waxwing, being found in Europe.

The *Piparinæ*, or Manakins, so called from their diminutive size, which is seldom larger than a Tomtit, display in their plumage the richest tints of yellow, orange, crimson, and blue, relieving an olive-green or deep black. They are strictly American birds, and chiefly occur in the deep virgin forests of the tropics. They live in little bands, are continually in motion, and feed almost entirely, according to Mr. Swainson, on the large soft berries of the different species of *Melastoma*. The beauty of their plumage and the peculiarities of their habits render these birds of considerable interest.

The species of Manakins appear to be pretty numerous. Latham enumerates forty; but little, however, is known of the minutiæ of their peculiar habits and economy.

The Blue-backed Manakin is an elegant little species, found both in the West India islands and the tropical parts of the American continent. Its length is four inches and a half. The plumage on the upper part of a deep velvet-black, with the back and the wing-coverts sky-blue, and the top of the head is covered with bright red feathers, forming an erectible crest. It is subject to some varieties in colour, even in the mature bird; for specimens are met with having the crest orange, and others with all the upper parts green. The female is olive on the upper part, passing into yellow on the under, and has no crest.

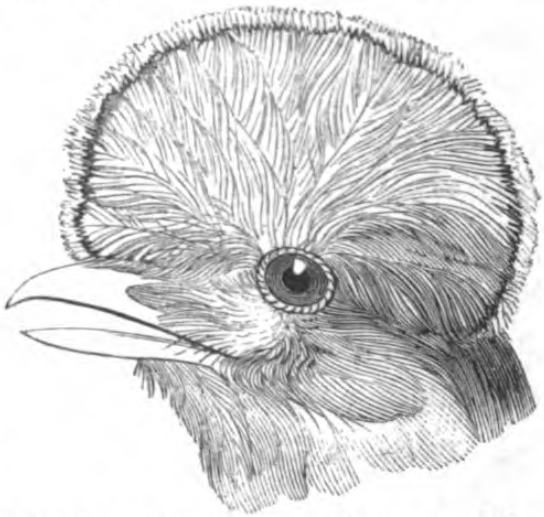
One of the most rare as well as beautiful species appears to be the Purple Manakin (*Pipra cristata*), a native of Mexico and Brazil. The colour of its body is described by M. Fermin as violet, like an amethyst, with a golden orange crest upon the head.

Of the sub-family *Ampelinæ* the forms and species are by no means few. Some of the most extraordinary birds in creation belong to this group, Mr. Swainson observes, while others, by being clothed in the richest hues of blue and red, nearly rival the Humming-birds. The former are generally the size of a large Thrush, and their singular appendages, if not ornamental, are certainly grotesque. One has the neck furnished with a number of long, slender, naked wattles; while from the forehead of a second rises a fleshy caruncle, which, when elevated, reminds us of the horn of a unicorn, but which is probably carried like that of the turkey; a third is perfectly white, with the face and throat bare of feathers, and of a beautiful green colour. Could we but know the habits and economy of these singular birds, which had they not been seen might be thought fabulous, what an interesting page of Nature's volume would be unfolded! Yet at present we only know that they live in the deepest and most secluded forests of tropical America, where they subsist on an infinite variety of fruits unknown to Europeans. They are much oftener heard than seen, since their notes are particularly loud, and are uttered morning and evening, from the deepest recesses of the forests.*

The true Chatterers, forming the genus *Ampelis*,

* Habits and Classification of Birds.

called by the French *Cotinga*, constitute a group of surpassing beauty. There is a peculiar soft, silky, and glossy texture in the feathers, which increases the splendour of the changeable blue, purple, and dark red, which generally spreads entirely over their plumage. The Rock Manakin of Cayenne (genus *Rupicola*) is distinguished by an elevated compressed crest, which rises from the top of the head like an expanded fan, partly concealing the bill. The whole plumage of adult males is of a most splendid orange colour; the secondary quills, upper tail-coverts, and tail-feathers are square at the ends, and the scapulars are elongated into loose flowing plumes. These birds are remarkably shy, and seek the most retired solitude, frequenting the cavernous hollows and dark recesses of the wooded mountains. They live on fruit, and are in the habit of scratching up the ground like the common hen; on which account they have obtained the name of Cocks of the Rock.



The Cock of the Rock is a native of South America, where he inhabits the rocky districts by the rivers Cayenne, Surinam, etc.; and is most likely to be found near the river Amazon, and by the majority of its tributary streams. Latham says it is nowhere so plentiful as on the mountain Luca, near the river Oyapok, in Guiana, and on the mountain Courouraye,

near the river Apronack, where it builds its nest of twigs and dry herbage. The eggs are two in number, whitish, and equal in size to those of the pigeon.

This handsome bird is shy and recluse in its habits and manners, loving silent glens and rocky ravines, where it seems to exist undisturbed. It flies rapidly, and lives chiefly on berries and smaller wild plants. Waterton tells us that it is found in wooded mountains of Macousia, a tract on the Apourapoura, one of the tributaries of the Essequibo from the south, and inhabited by the Macoushi (or Macusi) Indians, celebrated for their skill in the preparation of the urari, or fatal vegetable poison with which they smear the points of their arrows. This bird, he says, retires to hide in the daytime amongst the darkest rocks, and comes out to feed only just before sunrise and at the hour of sunset. Its disposition is gloomy and unsocial, and it never joins company with other birds of the forest. The Cock of the Rock is about the size of a pigeon.

Of the sub-family *Bombycillinæ*, or Swallow Chatterers, one species occasionally visits the British islands, and is known by the name of Bohemian Chatterer, Bohemian Waxwing, or Waxen Chatterer (*Bombycilla garrula*). The precise locality chosen by these birds to rear their young is not as yet ascertained; it is generally supposed to be in the Arctic regions, but Bonaparte, Prince of Musignano, thinks it probable that their chief place of abode is in the oriental parts of the old continent, and hazards an opinion that the extensive and elevated table-land of Central Asia is their principal rendezvous, whence,

like the Tartars in former times, they make their irregular excursions. They are very generally distributed in the northern regions, appearing generally in large flocks, and only in pairs in the breeding season. They perform extensive journeys, but are extremely irregular in their migrations. They are silent birds, and the familiar name of Chatterers which they have obtained is therefore singularly inappropriate.

Very little is known, says Bonaparte, of the peculiar habits of this elegant bird. It assembles in large flocks, and feeds on different kinds of juicy berries, or on insects, which during summer constitute its principal food. They are extremely fond of grapes, and of the berries of the mountain ash and phytolacca, and also, though in a less degree, of juniper and laurel berries, apples, currants, figs, and other fruits.

Besides their social disposition and general love of their species, these birds appear susceptible of individual attachment, as if they felt a particular sentiment of benevolence, even independent of the reciprocal attraction between the sexes. Not only do the male and female caress and feed each other, but the same proofs of mutual kindness have been observed between individuals of the same sex. They always alight on trees, hopping awkwardly on the ground. Their flight is very rapid; when taking wing they utter a note resembling the syllables, *zi*, *zi*, *ri*, but are generally silent. They are, however, said to have a sweet and agreeable song in the time of breeding, though at others it is a mere whistle.*

The most peculiar character of the Waxwing is the

* American Ornithology.

way in which the ends of the secondary quills are terminated. These have the tips of their shafts extended into little discs of soft horny substance, which appears as if that part of each feather had been dipped in sealing-wax; but of what use these little balances are to the birds in their flight, or in any other part of their economy, is not known. It is a beautiful bird, of handsome shape and richly coloured.

The Bohemian Waxwing is common on the Athabasca river, near the Rocky Mountains, and it was observed by Dr. Richardson at Great Bear Lake, in lat. 65°, where a male, of which he gives a description, was shot. "Specimens," says Dr. Richardson, "procured and transmitted to England by the servants of the Hudson's Bay Company, were communicated by Mr. Leadbeater to the Prince of Musignano, who introduced the species into his great work on the Birds of the United States. In its autumn migration southwards, this bird must cross the territory of the United States, if it does not actually winter within it; but I have not heard of its having been hitherto seen in America to the south of the fifty-fifth parallel of latitude.

"The mountainous nature of the country skirting the Northern Pacific Ocean being congenial to the habits of this species, it is probably more generally diffused in New Caledonia and the Russian-American territories than to the east of the Rocky Mountain chain. It appears in flocks at Great Bear Lake, about the 24th of May, when the spring thaw has exposed the berries of the Alpine arbutus, Marsh vaccinium, etc., that have been frozen and covered

during winter. It stays only a few days, and some of the Indians of that quarter with whom I conversed had seen its nests; but I have reason to believe that it retires in the breeding season to the rugged and secluded mountain limestone districts, in the sixty-seventh and sixty-eighth parallels, when it feeds on the fruit of the common juniper, which abounds in these places."

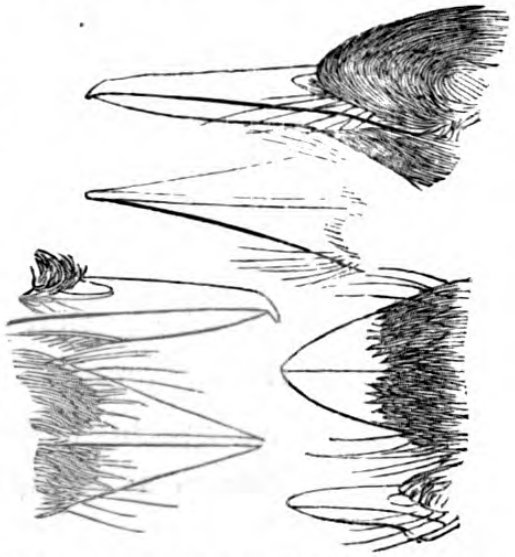
When these birds do come into Britain, it is only in the winter, being driven here apparently by storms. They arrive in flocks from the north-east.

There is one genus of the Chatterers which exhibits such a striking resemblance to the Swallows, in the width of the bill, length of the wing and tail, and the shortness of the feet, as to have induced M. Temminck to place one species in that very group.

As indicated by the above characters, these birds have great powers of flight. The width of gape in some of the species is very great, nearly as wide as that of a Goatsucker in comparison; the rictus is, however, destitute of bristles, which would seem to indicate that insects, or at least those which are capable of much resistance, form no part of their food. The exterior tail-feathers in some species are considerably produced, like those of the Swallow; in others, the tail is very short and even.

The Flycatchers (*Muscicapidæ*) are another family of the Dentirostral tribe. It is the most insectivorous family of the tribe, fruits forming no portion of their food, as with the Warblers, which are also habitual devourers of insects. This is one of the chief characteristics of the present family. They catch their food

during flight, but are not formed for constant or protracted exertion on the wing. Their organization is consequently in strict conformity with this habit, and we shall see, observes Mr. Swainson, how beautifully Nature has adapted it for such a life. The wings are not formed for such rapidity and celerity of movement as those of the Swallows, since the Flycatchers do not pursue their prey to any distance; but this deficiency is compensated by a very unusual breadth in the bill, the sides of which are furnished with long rigid bristles, pointing forwards; thus provided, a Flycatcher darts upon an insect with unerring certainty, since, if it fails to get a firm hold by its bill, the bristles standing out on each side confine the struggles of the victim, and, at the same time, prevent either the eyes or face being injured by the claws or wings of the insect.*



The Flycatchers, although they catch their prey upon the wing, are sedentary birds, choosing some convenient station from which they may watch for their prey, and darting out upon it when observed, generally returning to the same twig after every capture. The legs are not employed in constant exercise or exertion, as in most birds, but are merely used to sustain the body upon the perch; they are therefore small and weak in comparison, but considerable

* Naturalist's Library, vol. Flycatchers.

breadth is given to the sole of the foot by the union, to a greater or less extent, of the outer and middle toes.

The geographical range of this family in their pre-eminent typical examples, Mr. Swainson observes, is almost confined to inter-tropical regions; to those countries, in fact, where insects, which constitute their principal if not their only food, are the most abundant. During the heat of summer three, if not four, species emigrate into Northern and Central Europe, build their nests and rear their young; but on the first approach of autumn they disappear, and return to the more genial coasts of Asia Minor or Southern Africa. The aberrant divisions, with the solitary exceptions of one genus, are all peculiar to South America. The great-billed *Eurylaiminæ* are exclusively Indian, while the true *Muscicapidæ*, which comprise a greater number of species than are to be found in all the other divisions collectively, are distributed in nearly equal proportions over the hot latitudes of Africa, India, and New Holland; some few of very particular forms are found in Brazil, and others equally remarkable are restricted to the Australian provinces.*

The connecting link between the Chatterers and the present family appears to be the genus *Querula;* the typical species of which is the Red-throated Piahau (*Querula rubricollis*), or the Piahau Chatterer of Le Vaillant. It is a large bird, nearly twice the size of a Thrush, and measures eleven inches in length. The plumage is entirely black, except under the throat of the male, where the feathers are deep red and

* Naturalist's Library, vol. Flycatchers.

glossy. In size and in the general structure of its bill, wings, and feet, it bears a stronger resemblance to the Chatterers than to the Flycatchers; but the stiff bristles of the gape appear to indicate its insectivorous habits.

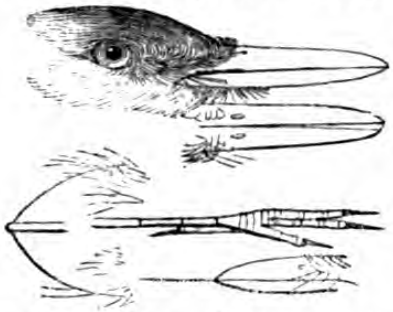
Although by no means scarce, this singular bird appears confined to those limited portions of tropical America which constitute the colonies of Demerara, Surinam, and their immediate neighbourhood.

Inhabiting the forests of the hottest parts of India are found some of the most remarkable birds of the whole family, namely, the *Eurylaiminæ*, or Broad Bill, They are in size about that of the Starling. The enormous breadth of their bills and the peculiar brightness of their colouring render them conspicuous, and distinguish these birds from the rest of the family. The bill is not only excessively broad, but the margins of the base are so dilated, that they often project over those of the lower mandible, while its substance seems much more solid than in ordinary Flycatchers.

The *Eurylaiminæ* are characterised by the extraordinary breadth of the bill, which in some species is broader than the head; the upper mandible is convex above, dilated at its base, and the margins folding over those of the under mandible; the tip abruptly hooked; the under mandible is very thin, particularly at the base; the nostrils are placed close to the front of the head, and are surrounded by a narrow membrane; the rictal bristles are small and weak; wings rather short; feet strong, moderate in size; tail short and rounded.

Horsfield's Gaper (*Eurylaimus Javanicus*) has the body above black; the scapulars and middle of the back striped with bright yellow; under plumage vinaceous, tinged with cinereous on the throat; above the breast a narrow brown bar; head cinereous brown, with an incumbent crest. Bill vinaceous brown, part of the culmen and the margins being yellow; the legs are pale.

The genus *Todus* forms an interesting group in the sub-family *Muscicapinæ*. These birds are chiefly confined to the tropical latitudes of America; they are all small birds, the largest not being equal in size to the Robin, while the smallest is more diminutive than the Goldcrest. The whole group is remarkable for three peculiarities:—1, the excessive shortness of the wings and tail; 2, the great comparative length and feebleness of the tarsi; and 3, the elongated boat-shaped form of the bill, so different to that of the true Flycatchers, as represented in the figure. This



great modification in the form of the bill indicates a different manner of procuring food. Upon this point, in the absence of better information, Mr. Swainson remarks, we can say something from personal knowledge. Whenever we observed the Black-capped Tody in the woods of Brazil, where it is by no means scarce, we always found it hopping among the branches and the foliage of trees, pursuing its search to the extreme twig, much in the same way as our Tomtits. If its appearance gave warning to some hapless insect which could fly, and the attempt was made, the Tody would

then make a little *saltus*, or jumping flutter, two or three inches from the branch, and, peradventure, seize the insect; but if not, it would still continue its search for others, as if its wings were too feeble to sustain that sudden and vigorous flight which the true Flycatchers can employ when so engaged.

The rictus or gape of these birds is but slightly bristled in the typical species; and in some the bristles are nearly obsolete. From this we may infer that the more powerfully-winged insect does not form the food of the Todies, but those insects only which are incapable of making any vigorous struggles when captured, such as larvæ perhaps, and other weak arboreal insects. The syndactyle form of the foot, notwithstanding the greater length of the tarsus, would seem to indicate that the Todies were more of tree-birds than frequenters of the ground; but the more robust form and comparative strength of the legs of the genus *Conopophaga*, together with the stronger form of the bill, we might be led to infer were thus modified in adaptation to a partial habit of frequenting the ground. Of the manners of the *Conopophagæ* but little is known, further than that they are only met with in thick woods.

The true Flycatchers (*Muscicapinæ*) are a numerous race of small birds, none of them being so large as a Sparrow; their whole structure is slight and delicate, and their colours devoid of vivid tints. The form of the bill, length of the feet, wings, and tail are much varied, and furnish the characters by which the genera and sub-genera are distinguished. They are chiefly found in the Old World.

The unpretending little bird known in this country by the name of the Spotted Flycatcher (*Muscicapa grisola*) is an example of the typical genus. It comes to us in summer, and seldom makes its appearance before the latter end of May, or until the woods are in complete foliage, when also the particular insects that compose its food are in full vigour and maturity. It is generally dispersed throughout the island, particularly in wooded districts. It frequents our gardens and orchards during the season of incubation, and frequently builds upon the branches of trees nailed against the walls, and sometimes in the forks and decayed holes of standard trees. The nest is also frequently placed on the side of a faggot-stack, or upon the ends of the beams or rafters of garden houses and other outbuildings; hence its provincial name of Beam-bird. It is by no means particular as to the situation of its nest. It lays four or five eggs of a greyish-white, spotted with pale orange-coloured brown.

The Spotted Flycatcher appears to feed entirely on insects, chiefly of the dipterous order, which are taken on the wing by repeated sorties upon them from its selected station, which is usually the extreme end of a decayed branch, the top of a post or rail, and to which it returns after each of these aerial attacks.

This bird has no power of voice beyond a monotonous weak chirp, which is not often heard till after the production of its young. The bill is dark brown; the irides hazel; the head and the whole of the upper surface of the body and wing-coverts hair-brown; the quills and tail-feathers being a little darker, with a

few dark brown spots on the top of the head; the tertials with a narrow margin of light brown; the under parts dull white, with a patch of light brown across the upper part of the breast, and a few dark brown streaks or spots upon that and the chin, with a clear white space between; the sides and flanks tinged with yellowish-brown; legs, toes, and claws black. The whole length of the bird is five inches and five-eighths.

One other species of Flycatcher only is found in this country, the Pied Flycatcher (*Muscicapa luctuosa*). It is a handsomer species than the other, and more energetic in its manners. Its habits are, however, very similar. In size it is nearly equal to the Linnet. The upper parts are black and dusky, and the under plumage white.

There is a genus or sub-family of ambulating Flycatchers or Water-chats (*Fluvicolinæ*), which inhabit the warm latitudes of America, where they seem, says Mr. Swainson, to represent the Stonechats and Wagtails of the Old World. Their legs are long, to enable them to walk with facility; their toes are also long, quite divided to their base, and furnished with long and slightly curved claws. These birds are thus enabled to run with great celerity. They rarely or never perch, and are never observed to hunt amongst trees, but they are generally seen at the sides of streams and rivers, feeding upon flying insects which resort to such situations. There are, however, modifications of habit as well as of form, whereby the typical species are connected to the neighbouring groups. Some of these birds are distinguished by a

crest upon the head, and a remarkable elongation of some of the tail-feathers.

The sub-family *Psarianæ*, or Blackcaps, suceeeds that of the Water-chats. The bill of these birds is less depressed than that of any other of the Fly-catchers, and its structure is altogether stronger and thicker; they are all natives of tropical America, and are generally found only in thick forests.

Africa produces some very handsome species of this family. Those which exhibit the most beautiful plumage are distinguished by the name *Muscipeta*. Le Vaillant has figured and described all the South African species in his beautiful but costly work on the birds of that country.