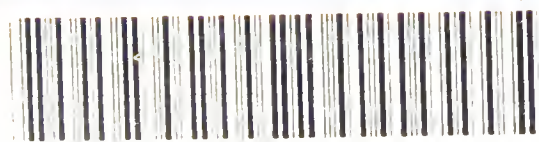


CASSELL'S
BOOK OF
BIRDS





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CASSELL'S BOOK OF BIRDS.



THE BLUE-STRIPED LORY — LORIUS CYANOSTRIATUS
(about four-fifths life size)

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CASSELL'S

BOOK OF BIRDS.

FROM THE TEXT OF DR. BREHM.

BY

THOMAS RYMER JONES, F.R.S.,

PROFESSOR OF NATURAL HISTORY AND COMPARATIVE ANATOMY IN KING'S COLLEGE, LONDON.

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CASSELL'S BOOK OF BIRDS.

EDITOR'S INTRODUCTION.



WE were some time ago both delighted and astonished by the performances of a German artist, who imitated with wonderful exactness the notes of a variety of birds. The song of the nightingale and the warblings of the skylark, the whistling of the throstle and the out-poured melody of the canary, were gone through with such perfect execution, that the birds themselves, we thought, could scarcely have detected a flaw in the performance. This gifted individual introduced himself to his audience by a somewhat humorous account of the manner in which he had acquired his extraordinary powers. He told us that his father, who was a breeder of birds, had upon one occasion gone from home, leaving a bag of rice as provision for his children, and a quantity of bird-seed for his feathered protégés. By some mistake the rice had been given to the birds, and the bird-seed to the children, the consequence being, that on the gentleman's return he found his birds all dead, and his children singing like piping bullfinches. How far this explanation was satisfactory we will not stop to inquire; but we have sometimes been almost tempted to suppose that some similar accident must be of frequent occurrence in Germany. The deep acquaintance of the ornithologists of that country with the objects of their study, and the fidelity with which they note down the minutest incidents connected with the history of their favourites, surpassing anything achieved by other naturalists, not even excepting such enthusiastic labourers as Wilson and Audubon, demands our warmest praise; while the patient industry, so conspicuous in their writings, at once calls for and excites our admiration.

Among the foremost of his countrymen in the cultivation of ornithological research stands the author of the magnificent work whose pages it is our wish to lay before English readers. Not content with studying the natural history of his favourites from books, or even in the rich scientifically arranged collections contained in so many Continental museums, his zeal led him to follow them even into their own wild retreats, and, gun in hand, to penetrate the burning deserts of Eastern Africa, and the equally inhospitable, and then but little known, regions of Abyssinia. By thus familiarising himself with the habits of birds in their native haunts, and amid the scenery whereby they are surrounded in a state of nature, he has been enabled to impart a freshness to his descriptions as characteristic of the real naturalist as the smell of new-made hay is redolent of fields and hedgerows, and no more to be imitated by the mere compiler than the voice of an orator by the reporter of his speeches.

Before, however, we permit our author to speak for himself, it may perhaps be desirable to preface his remarks by a few general observations concerning the structure of the beautiful creatures that form the subjects of his teaching, inasmuch as it is obviously desirable to have

clear notions concerning the machinery employed before its adaptation to its intended uses can be made manifest; and further, because in the study of ornithology, as in every other branch of natural history, there are certain conventional terms that may require explanation before the words used in describing an object are intelligible to the uninitiated.

The Bird is an inhabitant of the air in the fullest sense of the expression. The atmosphere is emphatically the sphere of its activity; it mounts it as it would a ladder; it sails through it in triumph, and rides upon the winds as upon a fleet steed. Moreover, it is the atmosphere itself which endows the feathered Ariel with such capabilities, and it is in the perfection of his respiration that we must search for an explanation of his wonderful achievements.

The muscular activity of every animal is intimately dependent upon the efficiency of its breathing apparatus, upon the freedom with which the vital element finds admission to the blood which it is destined to renovate, and upon which it confers those qualities so inseparably connected



Fig. 1.—RESPIRATORY APPARATUS OF A FOWL.

a, the Lungs, immovably fixed; *c*, *d*, the Breast-bone, moving as upon a hinge at *b*, so that it can be raised to the position indicated by dotted lines at *h*. 1, 2, 3, 4, 5, 6, Cells, with membranous walls, into which the air is freely admitted during the act of inspiration.

with the elimination of increased temperature, and the vigour of muscular action. In this respect, as we shall see immediately, the feathered races surpass all living creatures, with the exception, perhaps, of the members of the insect creation.

The lungs of a bird are not suspended, like those of a quadruped, within a circumscribed chest or thoracic cavity, in such a manner as to become inflated by each inspiration; they are rather to be described as soft, porous, and highly vascular organs, through which the air passes as through the interior of a sponge. The movements of the chest, upon which depend the inspiration and expiration of the atmospheric fluid, may be compared to those of a bellows continually employed in taking in and expelling the surrounding element by a mechanism represented in the accompanying figure (Fig. 1). The framework of the chest, consisting of the ribs and of the breast-bone, is so put together that at each inspiration it can be raised, as shown in the drawing, from the position *a* to the position *h*, thus materially enlarging the thoracic chamber, just as the upper board of an ordinary bellows is raised for the purpose of taking in the air; but, in this case, the surrounding element, instead of entering through a valve-defended orifice, rushes down the windpipe, and through the immovable, sponge-like lungs, permeating the wide passages with which they are perforated, and not only filling the entire thorax, but penetrating into the interior of the very bones, which are left marrowless for its reception.

The mechanism whereby expiration is effected is equally simple ; just as, when the upper board of the bellows is depressed, the air is forced out through the nozzle, so, by the return of the breast-bone to its former position, the inspired air is again forced to pass through the lungs and make its escape by means of the windpipe. By this process it is obvious that the vital element—the oxygen of the atmosphere—being admitted to every part of the system, the blood is vitalised to the greatest possible extent, its temperature is raised until the heat of the body of a bird is far greater than that of an ordinary quadruped, and its vitality is proportionately exalted. Consequently, as the blood circulates through the system, it carries with it heat and life in superabundance ; the energies of the entire system are roused to the uttermost ; the fibres of every muscle quiver with intense life, like a steam-engine working under high pressure, thus enabling the falcon to cleave the skies with the velocity of a falling thunderbolt, and not only qualifying the swallow for its rapid flight, but enabling it to achieve its wonderful migrations.

This admission of air into every part of the system serves not only to fan the vital flame, and rouse the energies of the bird to an extraordinary degree of tension ; it likewise assists in giving buoyancy to its movements, bearing it upward, as the gas does a balloon ; for it is evident that the air received into the body being raised to a temperature corresponding to the heat of its blood, the specific gravity of the bird is proportionately diminished, and it rises into the air almost without an effort, and even hovers in the sky with scarcely a perceptible movement of its wings.

A knowledge of the mechanism of their mode of respiration will likewise enable us to explain another remarkable feature in the history of the feathered tribes, namely, their power of song. Who that has listened to the prolonged warblings of a linnet, the flood of melody poured forth from the little throat of the canary, the “lengthened sweetness long drawn out” which almost pains the enraptured ear as we listen to the song of the nightingale, but has wondered how such tiny birds can ever find sufficient breath for the utterance of such long-sustained, such interminable notes ? What would our prima-donnas at the opera give for but the tithe of the capacity of these favoured little songsters ? No human breast could ever hold sufficient breath for such performances. We now see, however, that the vocal organs of a bird are exactly adapted to the nature of their music. Their whole body is a bellows, as large in proportion to their size as the bellows of an organ is in relation to the pipes into which it has to pour the sound. The little bird is, in fact, a living harmonium—its singing apparatus is not situated at the top of its throat, but is implanted in the inferior termination of its windpipe ; and just as the tongue of the harmonium is thrown into vibration by the issuing current of air caused by pressure upon the bellows, so are the vocal chords of the feathered songster rendered sonorous as the air passes over them. In proportion to the capacity of the bellows must be the duration of the note, and we have already seen that the air-cells of the bird are capable of furnishing a supply not easily exhausted. There is, however, this remarkable difference between the two instruments : the tongue of each key of the harmonium can give utterance but to one sound—one never-varying tone—while the corresponding part of the bird, rendered more or less tense by muscles provided for the purpose, contains within itself a whole gamut, and there is not a note in the scale that is not instantly at the command of the inimitable little musician. In the perching birds, among which are found by far the most accomplished singers, five pairs of muscles are connected with this exquisitely-contrived apparatus, and are so disposed as to influence both the diameter and the length of the air-passages. In the parrots three pairs are met with ; some of the swimming birds have two, while others have only one ; and in a few—as the king of the vultures and the condor—vocal muscles are quite wanting.

Seeing that the temperature of birds is raised so much above the usual standard by the arrangements described above, some clothing is requisite, adequate to retain the vital heat. Another indispensable

provision is therefore met with in the FEATHERS with which all birds are so warmly clad. Indeed, so peculiar is the texture of these admirable fabrics, that no better distinctive appellation could be devised for the entire class than that of the "feathered tribes," by which they are frequently designated. A feather realises in its structure more qualities than imagination could have conceived it possible to combine—lightness, thickness, warmth, durability, elasticity, softness, strength, and beauty. It is one of the master-works of creation. Whoever has examined a feather under the microscope will testify to the incomparable perfection of the contrivance. Every feather is a mechanical wonder. If we look at the quill-portion, or barrel, we find it possessed of attributes not easily brought together—strength and lightness. If we cast our eye upon the upper part of the stem, we see a material made for the purpose, which is used in no other class of animals, and in no other



Fig. 2.—WING OF A BIRD PARTIALLY STRIPPED OF FEATHERS, TO SHOW THE INSERTIONS OF THE QUILLS.

a, the Arm ; *d*, the Fore-arm ; *g*, the Thumb ; *c*, the Secondary Quills, implanted into the Fore-arm ; *f*, the Primary Quills, implanted into that portion of the Wing which represents the hand ; *e*, the Spurious or Bastard Quills, derived from the Thumb.

part of birds—tough, light, pliant, elastic—the pith. This is also a substance *sui generis* ; it is neither bone, flesh, membrane, nor horn.

But the most wonderfully constructed part of a feather is the *plume*, or, as it is sometimes called, the *web*. This is affixed to each side of the stem, and constitutes the broad expansion of the feather, that part which we usually strip off when making a pen. One of the first things to be remarked is that the web is much stronger when pressed in a direction perpendicular to the flat plane of the plume than when rubbed either up or down in the direction of the stem ; the reason of this is that the web is composed of numerous flat, thin, and broad laminæ, arranged with their flat sides together, so that, although they easily bend towards each other, they offer great resistance in the direction in which they have to encounter the impulse and pressure of the air ; and it is in this direction only that their strength is wanted and put to the test.

Another particularity is still more admirable. Whoever examines a feather cannot help noticing that the laminæ of which we have been speaking, in their natural state seem to be fastened together. Their adhesion to each other is manifestly something more than mere apposition ; they are not to be separated without a certain degree of force, and, as there is evidently no glutinous cohesion between them,

it is plain that by some mechanical means or other they catch or clasp among themselves, thereby giving to the web its closeness and compactness of texture. Nor is this all. When two laminæ which have been separated by accident or design are brought together again, they immediately re-clasp; the connection, whatever it was, is perfectly restored, and the web of the feather becomes as smooth and firm as if nothing had happened to it. Draw your finger down the feather, which is, so to speak, against the grain, and you will probably destroy the junction between some of the contiguous laminæ; draw your finger up the feather in the opposite direction, and you restore all to their former state of coherence. This is no common contrivance. Let us now inquire concerning the mechanism whereby it is effected. The laminæ above mentioned, examined individually, are found to be provided with vast numbers of long fibres, or teeth, which project from their edges in such a manner that, when placed in contact, those of contiguous laminæ hook and grapple together. The fibres are extremely minute; indeed, fifty of them have been counted by means of the microscope in the space of the $\frac{1}{20}$ th of an inch. Every fibre is crooked, but bent after a definite manner; those that proceed from one edge of a lamina are long, flexible, and bent downwards, whereas those that proceed from the opposite edge are shorter, firmer, and turned upwards. The manner in which they are united is, therefore, as follows: When two contiguous laminæ are pressed together, so that the long fibres are forced far enough over the short ones, their crooked parts fall into the angles formed by the crooked parts of the others, just as the latch of a door falls into the cavity of the catch fixed to the door-post, and there hooking itself, fastens the door. This admirable structure, which may be readily seen with a very ordinary microscope, ensures not only the union of the laminæ, but renders it possible that when any two of them have been separated by violence they will become re-connected with facility and expedition. In the ostrich, this apparatus of crotchets and fibres, of hooks and eyes, is wanting; the filamentary laminæ hang loose and separate, forming a kind of down; but such a plan of construction, however it may fit the plumes for the flowing honours of a lady's head-dress, must be considered as detrimental to the bird, inasmuch as wings composed of such feathers, although they may assist in running, will not serve for flight.

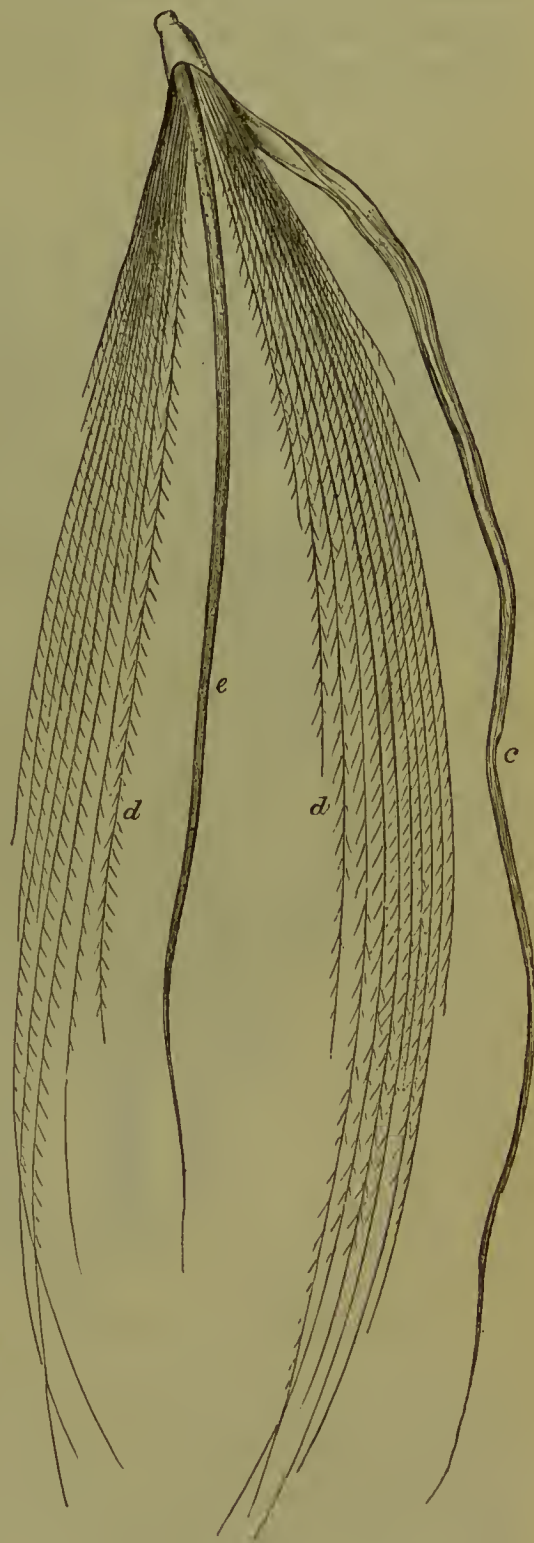


Fig. 3.—NASCENT FEATHER OF A CHICKEN.

c, the External Horny Sheath, slit open; *d, d*, Web of the Feather produced in successive layers from the central stem, *c*.

The power of inflating their whole body with air, and the possession of feathers, are therefore the most distinctive endowments of a bird, inasmuch as these attributes are quite peculiar to the class.

To creatures thus gifted with strength and activity so extraordinary, it is manifest that perceptions of great acuteness are requisite, corresponding with the rapidity of their movements and the

intelligence necessary for the performance of the important duties entrusted to their charge; and in this respect, as will be made manifest by a perusal of their history, they occupy a position in the economy of nature fully equal or even superior to that enjoyed by the most favoured quadrupeds. The mental faculties of the parrots correspond with those of the monkeys, whom in their habits and capabilities these birds closely resemble; in cunning they are quite upon a par with their four-handed neighbours,

with which, in the forests of tropical countries, they are so generally associated; and when removed from their native woods, and made, as they often are, the companions of mankind, the facility with which they can be taught to imitate human actions—nay, to mimic our very speech—bears ample testimony to the exalted character of their mental capacities.

On examining the brain of a bird, the anatomist is therefore by no means surprised to find that, both in its development and in the perfection of its structure, it surpasses that of many quadrupeds. The proportionate volume of the brain of some of our singing birds, as compared with the dimensions of their body, is astonishing, and reveals to us at a glance the reason why these little favourites are so sagacious and so eminently susceptible of education. (See Fig. 4.)

In strict correspondence with this exalted condition of their cerebral organisation are the senses whereby they hold intercourse with surrounding nature. Their power of vision is beyond our comprehension, and the elaborate contrivances whereby the eye of a bird is adapted to its peculiar mode of life, might furnish materials for a lengthy treatise, imperfect as is our knowledge of the numerous delicate arrangements demonstrable by anatomical skill in every part of its structure. At present we can but briefly allude to a few of the more conspicuous peculiarities wherein the visual apparatus of a bird differs from that of other creatures.

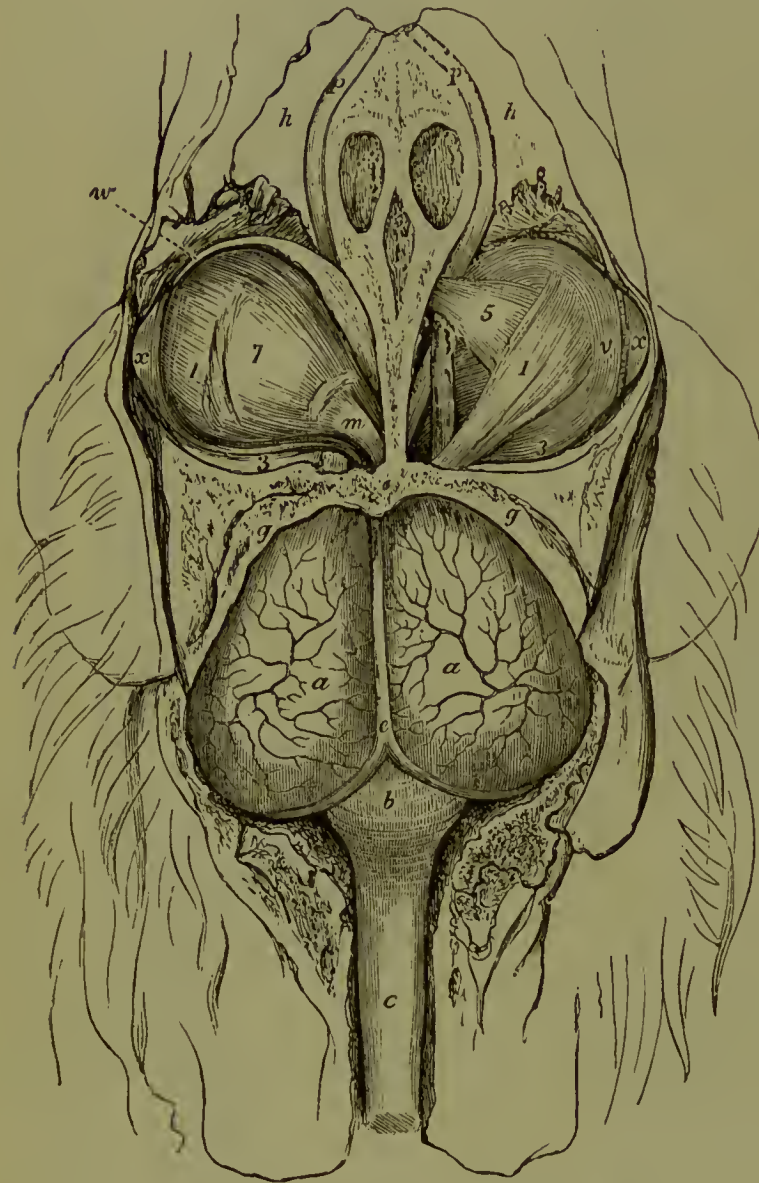


Fig. 4.—HEAD OF A SWAN (*Cygnus olor*).

The upper part of the skull has been removed to show the brain and eyes *in situ*. *a, a*, the Cerebral Hemispheres; *b*, the Cerebellum; *c*, the Spinal Cord. All the above parts are represented covered by their investing membranes. *e, e*, Sinuses of the Dura Mater; *g, g*, Walls of the Skull; *h, h*, Base of the Beak; *m*, Optic Nerve of the Left Eye; *p, p*, Large sentient Nerves supplying the Bill; *v*, Bony Ring in front of the Eye-ball; *x, x*, Transparent Cornea; *1, 3, 5, 7*, Muscles moving the Eye-ball.

The distances from which the vulture and the hawk can see their prey are almost incredible. To have the "eye of a hawk," to see with "eagle glance," are expressions which, though common enough, give but a very feeble idea of the extent to which those birds are gifted in this respect, or of the vast expanse bounded by their horizon. The falcon sees its diminutive prey from an altitude at which it is itself invisible, and from the very sky swoops down upon its quarry with the velocity of a shot, rarely missing its victim, and thus proving at once the perfection of its sight and the steadiness

of its aim. The eye of these birds must therefore be constructed after the plan of a telescope, and its focus adapted to long-sightedness. Its axis must be lengthened to an extent greater than is compatible with a spherical form of the eye-ball. To meet this requirement a circlet of bony plates, constituting a firm but at the same time somewhat flexible ring or hoop, is introduced into the composition of the outer coat of the eye, whereby the requisite elongation is effected, and the organ is thus adapted for perfect vision at a great distance. (See Fig. 4.)

The above beautiful arrangement, however, constitutes but a part of the mechanism required.

A telescope adjusted for distant vision is quite useless when brought to bear upon an object close at hand, and its focus must necessarily be altered in accordance with the changed conditions. In the case of the telescope, the needful adjustment would be effected by shortening or lengthening the sliding tube; but in the bird some other plan is evidently indispensable, and few contrivances in animal mechanics are more admirable than that which is adopted. Embedded in the transparent vitreous humour of the eye is a peculiar apparatus called the "marsupium," the texture of which resembles that of the human iris. Now the iris, as we all know, being eminently sensitive to the intensity of light, by its spontaneous contractions and dilatations is enabled to alter the diameter of the pupil of the eye, and thus exactly control the quantity of light admitted. The marsupium, equally sensitive, and equally spontaneous in its action, swells or contracts its dimensions, filling or emptying itself like a sponge,



Fig. 5.—SECTION OF THE HEAD OF AN EAGLE, SHOWING THE STRUCTURE OF THE EYE.

and thus adjusting the lenses of the eye so as to secure perfect vision at whatever distance the object to be seen may be placed. The quickness of sight with which birds are gifted is equally remarkable. The swallow is proverbially one of the swiftest flyers in the feathered creation, and yet in the full career of its flight it is looking on the right hand and on the left, upwards and downwards, for its food. The insects upon which it preys are often exceedingly minute, sometimes flying above and sometimes below the level of the swallow's course, and yet they are seen and captured without any diminution of the prodigious rate at which the bird is flying. Nay, more, any one who attentively watches one of these birds skimming over a meadow, may perceive that it will capture two or even three insects in such quick succession as to convince him that the swallow must have "had an eye upon them" all at once, and yet they are caught, as it were, in a moment.

Another admirable contrivance peculiar to the feathered race, is the existence of a thin,

semi-transparent veil, which, when requisite, can be instantaneously drawn over the front of the eye. This apparatus, generally known as the "nictitating membrane," is useful for a variety of purposes; it sweeps over the eye to cleanse it from dust, it diffuses the tears which keep it bright and polished, it will act as a screen to shut out the too great intensity of light, so that with its assistance the eagle can confront the sun even at noon-day; it will likewise defend the eye from sudden injuries, and yet, even when drawn like a curtain over the pupil, not shut out the light. The commodious manner in which this membrane lies folded up in the inner corner of the eye, and the quickness with which it executes its purpose, are known to every observer; but what is equally admirable, though not quite so obvious, is the employment of two kinds of material, and the combination of two kinds of force, by which the movements of this membrane are effected. It is not, as in ordinary cases, by the action of two

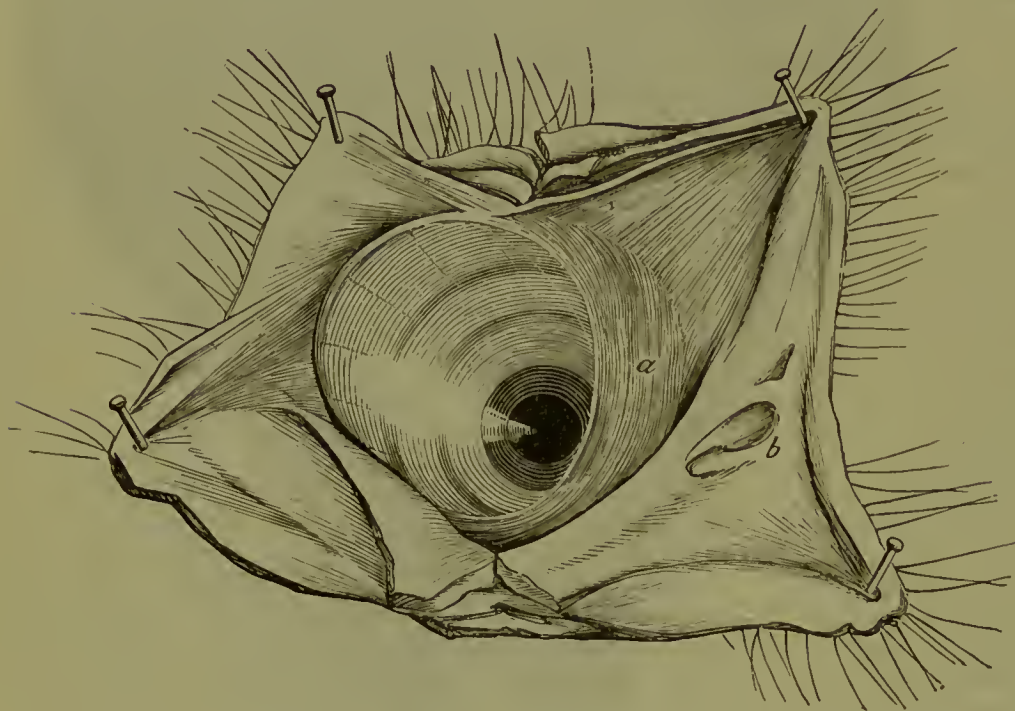


Fig. 6.—EYE OF AN OWL, SHOWING THE ARRANGEMENT OF THE NICTITATING MEMBRANE.

Both eyelids are divided through their middle, and everted, so as to display the Nictitating Membrane, *a*, and the passage for the tears (*puncta lacrymalia*), *b*.

orbit, derives from its situation the advantage of not only being secure from injury, but of being out of the way, which it hardly would have been in any position that could be assigned to it in the front of the eye, where its function really lies. When this muscle contracts, the membrane, by means of the communicating tendon, is instantly drawn, as it were, by a thread, over the transparent cornea, and when the muscle ceases to act, the elasticity of the membrane is sufficient to bring it back into its former position. (See Fig. 6.)

But this is not all. In the arrangement of the muscle which, though placed behind the eye, draws the nictitating membrane in front of it, there is what justly deserves to be called a marvellous piece of mechanical contrivance. The extent of contraction necessary to draw the membrane over the whole front of the visual organ would require a much longer muscle than could have been placed in such a situation; in order to meet this difficulty, the tendon which draws forth the nictitating membrane is made to pass through a loop in another muscle, as represented in the next wood-cut (Fig. 7), where it is evident that, by the simultaneous contraction of both these muscles, the extent of their action when drawing the nictitating membrane over the eye is considerably increased. Neither is this the only advantage derived from so ingenious a contrivance; were it not for the plan adopted, the

antagonist muscles, the one pulling it forward and the other backward, but the membrane itself, being elastic, is capable of being drawn out like a thin sheet of india-rubber, and of returning to its former position when the force acting upon it is removed. Such being its nature, in order to adapt it for its office it is connected by a tendon with a muscle situated at the back part of the eye. This tendon, though strong, is so fine as not to obstruct the sight, even when it passes across the pupil, and the muscle which moves it being situated deeply within the

tendon of the muscle *u x* would press upon the optic nerve, and thus materially interfere with vision—an inconvenience that by the existing arrangement is totally prevented. Devices like these, whereby special machinery is introduced for special purposes, speak for themselves; we acknowledge their beauty, and in them we recognise at once the wisdom and the goodness of the CREATOR.

The SENSE OF SMELL in birds has afforded subject-matter for much discussion; and great obscurity still exists with reference to the extent to which they make use of their olfactory organs. It has been generally asserted that birds of prey are gifted with an acute perception of odours, and are thus enabled to discover their food at a distance; but the rapidity with which vultures are known to assemble round the carcase of an animal too recently killed to attract them by putrefactive exhalations, has induced many observers to consider them as being directed entirely by sight. That this latter is the preferable theory appears to be sufficiently established by the experiments of Audubon, which go to show that these birds possess a sense of smell very far inferior to that conferred upon carnivorous quadrupeds, and that, so far from guiding them to their prey from a distance, it affords them no indication of its presence even when close at hand.

Having procured the skin of a deer, M. Audubon stuffed it full of hay, and after the whole had become perfectly dry and hard, he placed it in the middle of an open field, laying it down on its back in the attitude of a dead animal. In the course of a few minutes he perceived a vulture flying towards and alighting near it. Quite unsuspecting of the deception, the bird immediately proceeded to attack the carcase, as usual, in the most vulnerable points. Failing in this, he next, with much exertion, tore open the seams with which the skin had been stitched, and appeared earnestly intent upon getting at the flesh which he expected to find within, and of the absence of which not one of his senses was able to inform him. Finding that his efforts, which were long reiterated, led to no other result than the pulling out of sundry quantities of hay, he at length, though with evident reluctance, gave up the attempt, and took flight in pursuit of other game.

Another experiment, the converse of the preceding, was then tried:—A large dead hog was concealed in a narrow and winding ravine, about twenty feet deeper than the level of the ground around it, and filled with briars and high cane. This was done in the month of July, in a tropical climate, where putrefaction takes place with great rapidity; yet, although many vultures were seen

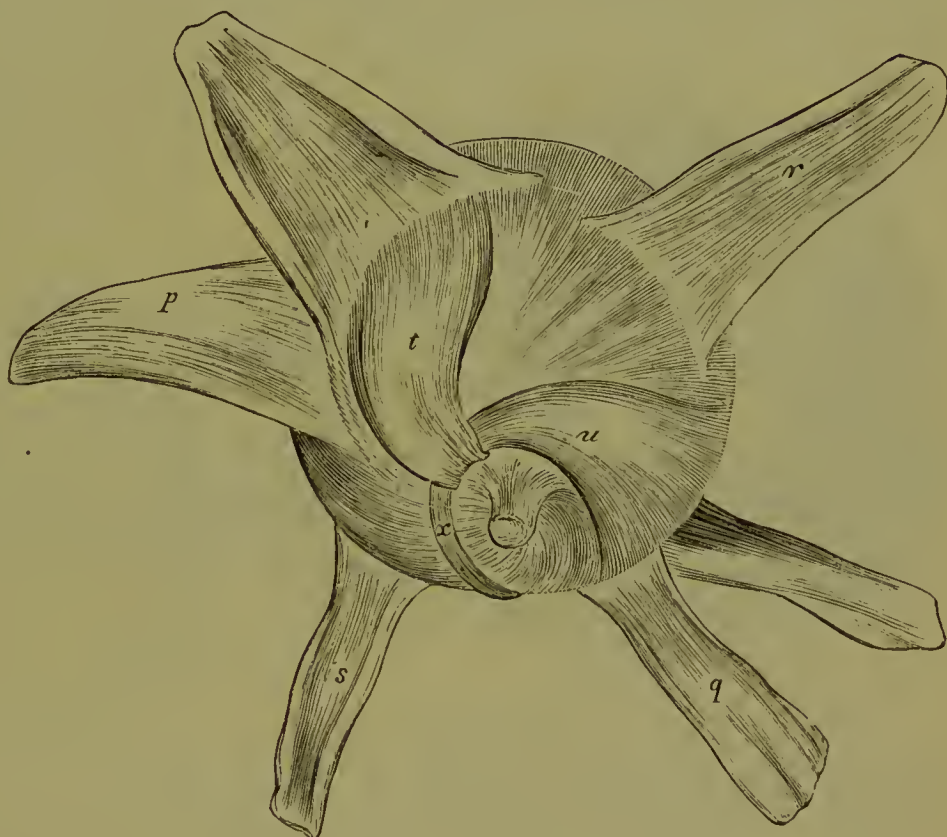


Fig. 7.—MUSCLES OF THE EYE-BALL AND OF THE NICTITATING MEMBRANE.

The Muscles of the Eye-ball, *p, q, r, s*, are separated from their origins, and turned aside, to show the "trochlearis" or "quadratus," *t*, and the "pyramidalis," *u, x*; the latter of which passes through a loop in the former, so as to gain a double extent of effect with a given length of fibre.

sailing in all directions over the spot where the putrid carcase was lying covered only with twigs of cane and light underwood, none of them appeared at all to suspect its presence.

Nevertheless, notwithstanding the apparently decisive result of the above experiments, anatomy teaches us that the olfactory apparatus in this class of animals is largely developed, and indicates by its extent that it is well adapted to investigate the odorous properties of the air taken in for respiration.

The SENSE OF HEARING in birds is remarkably acute, as might be readily inferred from the vocal capabilities conferred upon many of these gifted songsters. Their music is certainly not less appreciated by the performers than it is by their auditors. "Nobody can doubt," observes Bishop Stanley, "who sees a bird singing, clapping its little wings, turning from side to side, and glancing its bright eyes in all directions, as if courting attention and admiration, that it feels delight and satisfaction.

Did we require further proof, we have but to recollect that the song-bird is most alert with the music of its voice when its affections and interests are awakened by its mate during the time of rearing its young." It is, indeed, principally during the breeding-season that the singing power of birds is in full activity; and seeing that in general it is only the male that possesses the musical faculty, we may naturally suppose that its exercise is intended for the solace and amusement of his mate during her confinement to her nest. The nightingale himself becomes voiceless so soon as the appearance of his nestlings calls him to more profitable employment.

It is, however, among the nocturnal birds that the faculty of hearing is more specially developed. In the generality of birds there is no provision made externally for catching or concentrating sonorous impressions; but in the



Fig. 8.—EXTERNAL EAR OF A YOUNG OWL.

a, the Upper Part of the Head, partially denuded of feathers; *b*, the Beak; *d*, the Eye; *c*, *e*, *f*, Marginal Fold of Skin surrounding a cavity, the interior of which somewhat resembles the folds of the human ear; *g*, Auditory Passage leading to *h*, the Drum of the Ear (*membrana tympani*).

owls, the bustards, and a few others that venture forth at night, we find a different arrangement. In the owls, more especially, an external auditory apparatus is very conspicuous; not only does the integument exhibit a variety of folds, the disposition of which forcibly reminds us of the human ear, but the feathers upon the sides of the head are so disposed as to fulfil in some degree the purposes of a hearing trumpet. (See Fig. 8.) In such species the sense of hearing is exquisitely developed.

In the generality of birds the SENSE OF TASTE can scarcely be said to exist. The manner in which they obtain and swallow their food precludes the possibility of enjoyment from this source, so that their tongue is in many cases appropriated to some totally different use. In by far the greater number the tongue is small, thin, and cartilaginous; the extremity is flat, and incapable of being protruded beyond the bill. (See Fig. 9.) There are, however, great varieties in the construction of this organ, a few of which will require our notice.

The tongue of the parrot, although its substance is not so fleshy, has some resemblance to that of man, and it is probable that this is one of the circumstances enabling these birds to imitate the human voice with so much facility.

In the family of the toucans and some others, the tongue, without being extensible, is fully as

long as the largely developed bill, and, moreover, its sides are fringed like those of a feather. A tongue of this description may probably be endowed with some delicacy of taste, enabling these birds to appreciate the flavour of the fruits on which they feed.

Birds of the duck family have the largest tongues. Owing to its fleshy appearance it more nearly resembles the human tongue than even that of the parrot. Birds of this family discriminate their food not by sight, but by the delicate sense of touch with which their tongue is endowed. They thrust their bill into the mud, and from the mouthful thus obtained select, by means of their tongue alone, whatever is fit for food, rejecting the rest.

The smallest tongues are found in the night-jars and swallows, two groups which at the same time are distinguished by having the largest mouths in proportion to the size of their bodies; and in this case the design is equally apparent. These birds feed upon living insects captured during their rapid flight, and immediately swallowed whole; taste is out of the question. A large tongue would only be in the way, and it is therefore reduced to a mere rudiment.

In the preceding examples the length of the tongue never exceeds that of the bill; but in the case of the woodpeckers it is protrusible to a wonderful extent. On opening the bill of a woodpecker

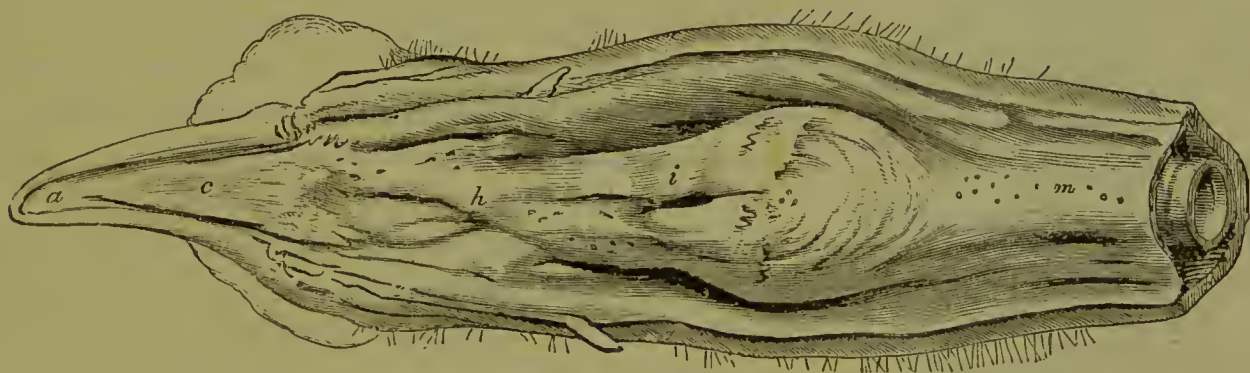


Fig. 9.—THE THROAT OF A FOWL, SHOWING THE PARTS *in situ*.

a, the Lower Mandible; *c*, the Tongue; *h*, *m*, interior of the Gullet; *i*, the Upper Larynx.

immediately after it has been killed, the tongue seems of ordinary length, or indeed rather short, and shaped somewhat like the spears used by the Caffres in South Africa, called *assagais*, pointed at the end and furnished with numerous barbs. (See Fig. 10.) This, however, is only the tip of a very remarkable instrument. If the barbed portion be drawn out of the mouth, a person unacquainted with its nature would think that he had got hold of a very long earthworm that the bird had incautiously tried to swallow, but which had stuck in its throat; hence a tongue of this description is called *vermiform*. The point in its usual position reposes in the ordinary manner between the mandibles; the rest is concealed, but is susceptible of extension, at the pleasure of the bird, to four or five times the length of the bill. The act of protrusion is effected by the remarkable structure of the root of the tongue, or more properly of the *os hyoides*, or bony apparatus whereby it is attached. The posterior prolongations derived from the *os hyoides* are compactly curved around the back of the skull; and occasionally they are prolonged forwards to such an extent as actually to reach the nostrils. By means of this somewhat complex arrangement the woodpecker, having broken away the bark of a tree by the powerful strokes of its bill, and thus laid open the retreat of the insects beneath, suddenly darts out its tongue, spears its prey, and instantly brings the transfixed insect into its mouth.

The SENSE OF TOUCH must be of very limited utility; indeed, there seems to be no part of the body of a bird so constructed as to be capable of tactile impressions. The wings, the representatives of hands and arms, are obviously entirely unfit for the exercise of such a function; neither do the legs

and feet seem to be better suited to this purpose. The only organ of touch about which there can be no doubt is the bill, yet even this is generally covered with a hard sheath of horn. Nevertheless, in some races the extremity of the bill is soft and largely supplied with nerves. In snipes and woodcocks, for example, the sensitive extremity of the beak materially assists in procuring their food.

For the systematic arrangement of the class of birds, the conformation of their feet has been found to afford characters of great importance to the ornithologist, inasmuch as the organisation of these members must obviously be in strict relation with the localities they inhabit. To account for the distribution of the feathered tribes, and to explain the relationships that exist between them and other animals, a great variety of ingenious theories have been broached, all of them more or less fanciful. The different families, sub-families, and minor groups into which they have been divided have been again and again sorted, like a pack of cards, frequently more in accordance with the whim of the player than with the established rules of the game. And yet a little reflection will show that the great principles of zoological classification are so simple, and at the same time so immutable, that we sometimes cannot but admire the ingenuity displayed in going wrong.

Few things are more manifest to the student of nature than that, in the distribution of the animal creation, it has been ordained that every locality shall be peopled by forms of life pre-eminently adapted for its occupation. If, therefore, we are asked whether birds ought to be arranged in circles or in squares, in hexagons or in pentagons, in groups of five or in groups of seven, our simple reply would be by inquiring how many localities could be pointed out as requiring appropriate occupants, and to this question it is not difficult to find a satisfactory answer.

The earth, the water, and the air, throughout their broad domains, must each of them be provided with inhabitants peculiarly constructed to live in their diversified regions. Upon the earth, we find the level ground, the mountain, and the glen; we find the pathless forests, and the solitary trees and shrubs, and bushy underwood. We cast our eyes upon the waters, and we see the world of ocean covering two-third parts of this great globe, stretching from pole to pole, rolling its mighty waves through every zone; we see the creeks and shallow bays that margin it all round, and watch the waves as they approach the

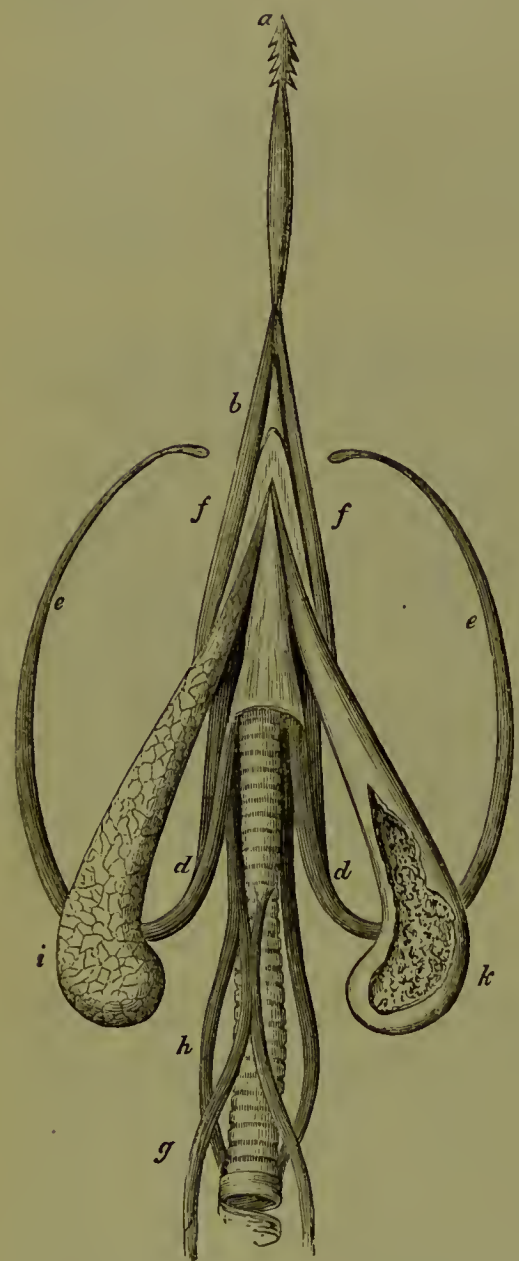


Fig. 10.—TONGUE OF THE WOODPECKER,
SHOWING THE MECHANISM EMPLOYED FOR
ITS PROTRUSION.

a, harpoon-like Tip of the Tongue; *d, e, f, g, h*,
Framework of the Throat; *i, k*, Glands fur-
nishing adhesive secretion.

shore and lay them down to sleep upon the beach. There are the rivers, too, and lakes, and swamps and marshes which are neither land nor water, sometimes overspread with floating vegetation, sometimes a broad expanse of ooze and rushes far too soft to bear the weight of creatures that might try to walk upon the treacherous surface. We look into the air, and there we find between the earth and sky abundant room for birds of every wing. If, therefore, with this little map of the world before us, we reply to the question propounded above, we should be tempted to say that there must necessarily

be as many different types of organisation as there are districts therein enumerated; and doubtless a reference to any system of ornithology, however much the classification may be confused by preconceived theories, will convince us that such is essentially the foundation of any natural arrangement.

In taking, therefore, a brief survey of the principal groups, or ORDERS, under which the feathered races have been distributed, we will begin with those appointed to live on trees, inasmuch as these are regarded by the author of the following pages as being entitled to the highest rank in the class to which they belong, rivalling in intelligence, as some of them do, the apes and monkeys of which they are in general the inseparable companions.

Few people in this country have any adequate conception of a tropical forest, and, consequently, are scarcely prepared to see whole races of animals constructed specially for a residence in the umbrageous wilderness within its pathless precincts. The great forest of the Amazon, in all its primeval grandeur, stretches for a thousand miles from north to south, and probably three or four hundred from east to west, and over all this vast extent of territory, so closely are the branches interwoven that, as we are told, a monkey might make his way passing from tree to tree without ever coming to the ground except at those points where the rivers hold their course through the tangled yet sublime scenery. "In these untrodden fastnesses the trees, rising frequently to a height of sixty or eighty feet, with stems perfectly straight and without a branch, give support to the huge creepers that climb around their trunks like immense serpents waiting for their prey, or sometimes stretching obliquely from their summits like the stays of a lofty mast, here twisting round each other till they form living cables, as if to bind securely the patriarchs of the forest; there wreathed in tangled festoons, and themselves covered with smaller creepers and parasitic plants." Such is Mr. Wallace's description of the interior of the Amazonian forest.

"The forests of Rio Janeiro," says Mr. Darwin, "are ornamented with the cabbage palm trees 110 feet high, with a stem so narrow that it might be clasped with two hands. The woody creepers themselves are of great thickness, some of them measuring two feet in circumference. If the eye was turned from the world of foliage above to the ground beneath, it was attracted by the extreme elegance of the leaves of the ferns and mimosæ (sensitive plants). The latter in some parts covered the ground; in walking across these thick beds, a broad track was marked by the change of colour produced by the drooping of their sensitive leaves. It is easy to specify the individual objects of admiration in these grand scenes, but it is not possible to give an adequate idea of the higher feelings of wonder, astonishment, and devotion, which fill and elevate the mind."

These are the localities amongst which species of the ARBOREAL ORDERS find their Paradise, and hold undisturbed possession. Myriads of climbing birds—parrots, macaws, and cockatoos—fill the

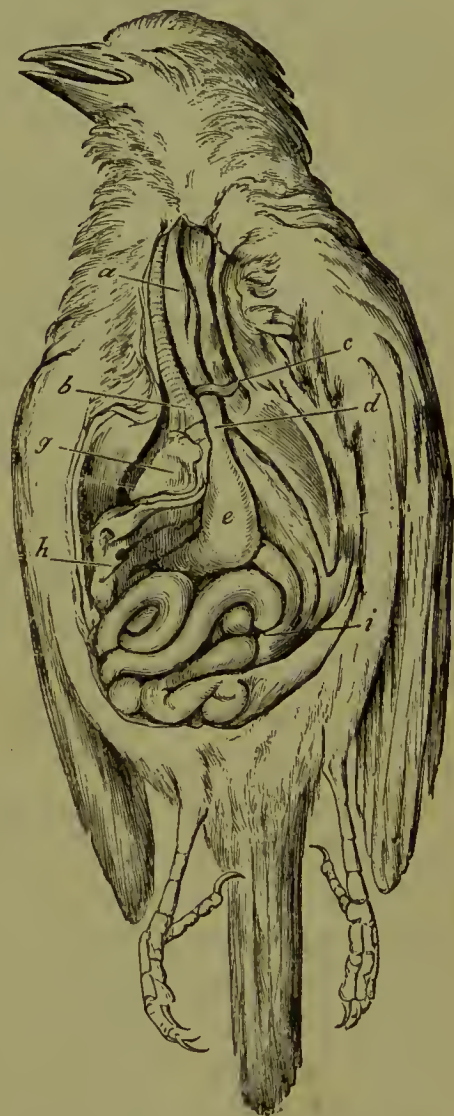


Fig. II.—VISCERA OF SMALL BIRD
(*Euphonia violaceus*).

a, Crop; *b*, termination of the Windpipe, or inferior larynx; *c*, one of the Vocal Muscles; *d*, lower portion of the Gullet; *e*, the Gizzard; *g*, Lung of the right side; *h*, Liver; *i*, Alimentary Canal.

whole atmosphere with joyful screams, deafening the very monkeys with their din ; gorgeous toucans, with enormous bills and feathers dipped in flame, and woodpeckers scarcely less gaily clad, make the woods echo, as with axe-like beaks they chop their way in search of insect food.

The peculiar structure of the feet in the arboreal races is evidently adapted to a life amongst the branches of trees : the outer toe can be directed backwards like a thumb, enabling them to grasp the boughs as with a hand.

If, leaving the trackless gloom of the forest, we approach the sylvan scenery of the surrounding country, the "bosky woods" and isolated trees, or the sparse undergrowth of bushy shrubs, we find innumerable forms that have their feet contrived for *perching* only. These INSESSORIAL races, called also PASSERES, from their general resemblance to sparrows, live upon insects, fruit, and grain ; but those with strong beaks live more exclusively upon grain, and those with slender beaks upon insects. The proportional length of their wings is as variable as their habits. They have four toes, generally so disposed that there are three in front and one behind ; sometimes all four in front. Their legs are slender, and they hop rather than walk.

The forests and the trees, the bushes and the brakes, the thickets and the hedgerows, being thus provided with appropriate denizens, we turn our attention to the level ground ; and here we find species as obviously designed for a terrestrial existence as were the preceding groups for a residence among the branches. The terrestrial or GALLINACEOUS birds live principally upon the ground. Their body is large and heavy, and their wings short and rounded, so as to be but ill adapted to prolonged flight. They have three toes in front, which are united at their base by a short fold of the skin, and their hinder toe is affixed above the level of the rest. In many species the male is provided with formidable weapons in the shape of *spurs*. To this order belong the turkeys, pheasants, and barn-door fowls. Their legs are thick, strong, and muscular, their toes short and powerful. They always prefer running to flying, and, indeed, will rarely take to their wings, except when compelled to do so by the urgency of the occasion.

If any doubt could be entertained as to the terrestrial character of the gallinaceous birds, there can be none whatever as to those distinguished by the name of CURSORES or runners. The principal characteristic of the cursorial race consists in the undeveloped condition of their wings, which are quite disproportioned to the size of their body. In some cases these rudimentary wings are but imperfectly furnished with feathers, and seem only to be used after the manner of sails, to catch the wind, and thus assist in running. The living species form two families, of one of which the Ostrich, and of the other the Apteryx, is the type.

Leaving the firm dry land, we next turn our attention to the marshes—the dubious confines between land and water—and here we find the order of WADERS, or, as they have been named on account of their long stilt-like legs, GRALLATOIRES or stilt-walkers. These birds, as their name imports, are characterised by the height of their legs, which are naked, and thus adapted for wading to a certain depth into the water, where many species catch their prey. A remarkable example is met with in this order of the facility with which difficulties, apparently insurmountable, in the adaptation of certain species to peculiar circumstances, have been encountered and overcome. In India, the tanks and ponds of considerable depth are more or less covered with the broad leaves of water-lilies and other floating vegetation. In such places, which are far too deep to be occupied by wading birds, and yet too extensive to be left without inhabitants, we find a family provided with toes so enormously lengthened, and moreover eked out by claws of such extraordinary length, that the spread of their feet extends over a very large surface, thus enabling them to walk over the floating weeds.

Another order of birds comprehends those whose feet are specially constructed for swimming, constituting a NATATORIAL TYPE ; for this purpose they are placed far back upon the body, the legs

are short and compressed, and the toes are united by a web. Their plumage is thick and shining, impregnated with oil, and closely packed with soft down, so as to preserve them from all contact with the water. They are the only birds the length of whose neck much surpasses that of their legs, thus enabling them, while swimming at the surface, to obtain their food at the bottom. Such are the DUCKS and SWANS, which are, moreover, further characterised by having their bill covered with a soft skin, and furnished occasionally at the sides with ridges and tooth-like points. The DIVERS, trusting to their superior powers of battling with the watery element, are met with further from the shore; while, at distances still more remote from land, daring the utmost fury of the tempestuous ocean, walking upon the waters, or riding upon the seas—

“Up and down, up and down,
From the base of the wave to the billow's crown,
In the midst of the flashing and feathery foam,
The Stormy Petrel finds *her* home.”

Lastly, in this our rapid survey of the distribution of the feathered tribes, we have to speak of those whose element is the air. And here, perhaps, the reader may feel inclined to remark that, with the exception of the cursorial birds, such as the Ostriches and the Apteryx, all the species we have had occasion to mention are more or less capable of flight—that this is the special attribute of the whole class. Nevertheless, upon a little consideration, he will find that amongst the many races that fly well, there are some so pre-eminent in this respect that all others quail before them. It is one thing to be able to fly, and another to be furnished with wings so powerful that they never seem to tire. It is one thing to be the champion of the coppice, but another to be the tyrant of the sky!

The greatest powers of flight are of course conferred upon the rapacious birds, whose business is to overtake and destroy their swift-flying prey. To enable them to do this, their wings are necessarily of the most perfect structure; and they may also be recognised by their feet, which are strong, and armed with formidable talons. Of the swiftness of the falcon we have spoken elsewhere; and any one who has witnessed the flight of the eagle is not likely to have forgotten so grand a spectacle; his movements are majestic, and as he sails above the clouds on outstretched wings he seems to feel himself the monarch of the scene around. And yet even the falcon and the eagle cannot, as regards their powers of flight, be looked upon as the most highly gifted of flying birds. The spread of wing of the frigate-birds measures ten feet from tip to tip, and their flight is so powerful that they are everywhere to be seen in tropical climates at immense distances from land; while the albatross has been known to fly around a ship for weeks together, exhibiting such indomitable strength of wing that it has been supposed to be capable of circling round the world.

It is by no means our intention to trouble the reader with unnecessary details concerning the anatomy of the creatures upon the history of which he is about to enter; nevertheless, it is indispensably requisite that we should give at least an outline of their internal organisation.

No one can have examined attentively the bony framework whereby the body of a bird is sustained, without being forcibly impressed with the lightness as well as the compactness of its construction. The most wonderful economy is exhibited in the arrangement of the weighty material of which it consists. The bones present in their interior extensive cavities, whereby they are considerably lightened, and their walls, although exceedingly dense and strong, are much thinner than in any other animals. The extremities of the cylindrical bones are occupied by a light open network of slender filaments shooting across in every direction from wall to wall, and as these attenuated buttresses are likewise hollow, it is easy to perceive how incomparably lightness and strength are here conjoined.

The extent to which the skeleton is thus filled with air varies in different birds in relation with

their powers of flight. In the Swifts and the Humming-birds every bone of the skeleton, even to the toes and the claws, is permeated by the atmospheric fluid. In the opposite extreme, the terrestrial Apteryx and the aquatic Penguin have not a single bone thus excavated.

The skeleton of an animal formed for flight must be constructed upon mechanical principles of a very refined character. The utmost lightness is indispensable ; nevertheless, in a framework which



Fig. 12.—SKELETON OF A BIRD.

a, the Skull ; *b*, Vertebrae of the Neck ; *c*, Dorsal Region of the Spine ; *d*, Vertebrae that support the Tail ; *e, e, e*, the Sternum or Breast-bone ; *f, f, f, f*, the Ribs ; *h*, the Scapula, or Shoulder-blade ; *i, i*, the conjoined Clavicles or Collar-bones, forming the Furculum, or "Merrythought ;" *k*, the Coracoid Bones ; *l*, the Humerus, or Arm-bone ; *m, n*, Bones of the Fore-arm ; *o, b'*, Bones of the Wrist or Carpus ; *p, p*, the Metacarpal Bones and Rudimentary Thumb ; *q, q*, Pieces representing the Middle Finger ; *r, s, s*, the Pelvis, formed by the consolidation of the hinder Vertebrae of the Back into one piece ; *t*, the Thigh-bone ; *u*, the Leg ; *x, x*, the Tarso-Metatarsal Bones, usually called the Tarsus ; *y*, the Hallux, or Hinder Toe ; *z, z*, the Front Toes.

has to sustain the powerful action of muscles so vigorous, strength and firmness are equally essential. It is in combining these two opposite qualities that the human mechanic exhibits the extent of his resources and the accuracy of his knowledge ; but let the best and most ingenious mechanic carefully examine the skeleton of a bird, and we doubt not that in its construction he will find all his ingenuity surpassed, and perhaps derive not a little instruction from the survey.

In order to render the following account of the structure of a bird's skeleton intelligible to the non-scientific reader, we have delineated that of the Pigeon, and with this figure before us we shall have but little difficulty in indicating those points with which it is essential that the reader of the present volume should be intimately acquainted. (See Fig. 12.)

In the back-bone, or vertebral column, we find three principal regions, each of which will merit distinct notice.

The *cervical region*, or that portion belonging to the neck (Fig. 12, *b*), is exceedingly variable in its proportionate length, and forms the only flexible portion of the spine; it performs, indeed, the functions of an arm, at the end of which the beak, the chief instrument of prehension, is situated. The number of vertebræ entering into the composition of this part of the skeleton is very variable; in the Swan there are as many as twenty-three, in the Crane nineteen, while in the Sparrow there are only nine. As a general rule, it may be observed that the neck of a bird is never so short as not to be able to reach to every part of the body; in many aquatic species it is remarkably elongated, whether they swim upon the surface by means of webbed or natatory feet, like the Swan, or wade into rivers and marshes, like the Cranc or the Heron. Throughout the entire class a very beautiful contrivance is observable in the S-shaped curvature of this region, the joints of the upper vertebræ being so disposed that they will bend forwards, while in the lower part they can only be bent backwards, thus enabling the bird to lengthen or shorten its neck with the utmost facility and gracefulness.

But if flexibility is thus admirably provided for in the cervical region, in the thoracic portion of the skeleton which has to support the framework of the wings, and sustain the efforts of the powerful muscles connected with flight, firmness and rigidity become essential requisites, and, accordingly, in the dorsal region, every means has been employed to prevent those movements which in the neck are so advantageously permitted. The vertebræ of this region (Fig. 12, *c*) are therefore so consolidated as to be almost immovable; and, moreover, splints of bone laid along the back materially add to its stability and strength. There are likewise two sets of ribs, one firmly lashed to the back-bone, the other strongly attached to the sides of the sternum; these dorsal and sternal ribs are moreover united to each other by firm connections, and a thorax is thus formed, possessing sufficient mobility to perform the movements connected with respiration, but still affording a strong basis for muscular action; nay, still further to strengthen this part of the skeleton, from the hinder margin of each dorsal rib a broad flat plate of bone (Fig. 12, *f*) is prolonged backwards, so as to overlap the rib next behind, and thus bind the whole together as firmly as possible.

The sternum or breast-bone (Fig. 12, *e*) is developed in proportion to the size of the three pectoral muscles subservient to flight, and is prolonged beneath into a deep keel-like projection. In the cursorial races, such as the Ostriches and the Apteryx, whose wings are not available for flying, the keel is entirely wanting.

Whoever considers the position of the hip-joint in the skeleton of a bird, and reflects how far it is necessarily removed behind the centre of gravity when the bird walks with its body in a horizontal position, will at once perceive that the hinder portion of the spinal column, having to support the whole weight of the body under the most disadvantageous circumstances, and at the same time to give attachment to the strong and massive muscles that wield the thigh, must be consolidated and strengthened in every possible manner, and that even the slight degree of movement permitted in the region of the back would here be inadmissible. Most of the hinder vertebræ are, therefore, solidly conjoined into a single piece (Fig. 12, *r, s*), sufficiently strong and massive to bear the great strain to which it is continually subjected, leaving only a few of the hindmost pieces (Fig. 12, *d*) free, upon which the feathers of the tail are supported.

The fore limb of a bird, although used for the purpose of flight, when stripped of the feathers

and quills that, as we have already seen, form the extensive surface of the wing, will be found very much to resemble the human arm in its general arrangement, presenting only such modifications as are required for the performance of its peculiar function.

The framework of the shoulder consists of three bones (Fig. 12, *h, i, k*), named respectively the *scapula* or *shoulder-blade*, the *clavicle* or *collar-bone*, and the *coracoid bone*. The scapula (*h*) is a long and comparatively slender piece placed upon the ribs, and embedded in the muscles, to which it gives attachment. The coracoid bone (*k*) is the strongest piece of the shoulder; it supports the wing at one extremity, while at the opposite it is firmly united to the sternum by a broad and massive joint. But the most peculiarly formed part of the shoulder is the *furculum*, or "merry-thought," as it is usually called (*i i*), consisting of the two collar-bones united, so as to form but a single fork-shaped apparatus, the presence of which materially enlarges and strengthens the shoulder, without unnecessarily adding to the weight. It is by the union of the three last-mentioned bones that a place is made for the socket of the shoulder, with which the wing is more immediately connected.

The skeleton of the wing presents the bone of the arm, called the *humerus* (Fig. 12, *l*), and the two bones of the fore-arm, named respectively the *radius* (*m*) and the *ulna*, or *cubit* (*n*). The *wrist*, or *carpus*, consists of two bones (*b' o*), and the *metacarpus* (*p*) is likewise made up of two pieces; these, with two, or sometimes three, rudimental fingers (*p' q q*), complete the framework of the wing. The largest finger consists of two, or sometimes of three joints; a second offers but a single joint; and the third, when present, is a mere appendage to the carpus, representing a sort of apology for a thumb.

The bones of the leg likewise exhibit the same parts as exist in the human skeleton, but modified. The *thigh*, or *femur* (Fig. 12, *t*), is a short and strong bone, to which succeeds the leg, consisting of two bones (*u*), named the *tibia* and the *fibula*, but the latter is generally very imperfectly developed. That part which is commonly considered to be the leg consists of the bones of the ankle and a part of the foot (the tarsal and metatarsal bones) consolidated into a single piece, called by anatomists the *tarso-metatarsal* bone, but known to ornithologists as the *tarsus* (*x*). At the lower extremity of the tarsus are three joints that support the three front toes (*z, z*), while a fourth toe (technically called the *hallux*) (*y*), which is directed backwards, is attached to it by the intervention of a small accessory piece. In the gallinaceous order there exists a bony spur, considered by some as representing a fifth toe.

In order to facilitate the description of a bird, it is usual for the ornithologist to consider its exterior as being mapped out into sundry *regions* (see Fig. 13), to each of which has been assigned a definite and appropriate name; with the names of these regions, and their precise application, it is requisite that the reader should be intimately acquainted.

A bird, like any other vertebrate animal, is divisible into the head, the body, and the limbs; under one or other of which divisions all subordinate parts may be classed.

The head consists of the *skull* and the *bill*, and is joined to the body by the *neck*. Commencing with the bill, we see that it is composed of two pieces, corresponding to the jaws of quadrupeds; that which is above is called the *upper mandible* (Fig. 13, ¹), that which represents the under jaw is called the *lower mandible* (²). The upper mandible contains the *nostrils* (³); its highest part is called the *culmen* or *ridge* (⁴), while the corresponding ridge of the lower mandible is called the *gonyx* or *keel* (⁵).

The lateral edges of the mandibles which meet when the bill is closed are called the *margins*. In some birds the margins of the upper mandible fold over those of the lower, while in others the edges meet; when this is the case, the line of junction between the two is called the *commis sure* (⁶).

In many birds the upper mandible is continued far back over the forehead, and there dilated, so as to form a *casque* or *helmet*. In rapacious birds and parrots there is a belt of soft naked skin at the

base of the upper mandible, named the *cere*, in which the nostrils are placed, while around the eye is a space, often denuded of feathers, called the *ophthalmic* region (14).

The HEAD is that part which lies immediately over the skull, extending from the base of the beak to the commencement of the neck. The *front* or *forehead* (12) is that part of the head which lies close above the nostrils; then follows the *crown* or *summit* (17), which occupies the middle or centre



Fig. 13.—ORNITHOLOGICAL REGIONS OF THE BODY OF A SMALL BIRD.

- | | | | |
|---|-------------------------------------|------------------------------------|--|
| 1. Upper Mandible. | 12. The Forehead. | 23. The Neck above, or Upper Neck. | 34. Secondary Quills, or Secondaries. |
| 2. Lower Mandible. | 13. The Gape, or Rictus. | 24. The Back, or Mantle. | 35. Primary Quills, or Primaries. |
| 3. Nostrils. | 14. Space around the Eye. | 25. Scapular Wing-covers. | 36. The Shoulder Margin. |
| 4. Ridge, or Culmen. | 15. Lower Throat. | 26. Lower Back, or Tergum. | 37. Wing Covers. |
| 5. Commissure, or cutting edges of the Mandibles. | 16. Superciliary Region. | 27. The Shoulder. | 38. Under-surface or Under-part of the Body. |
| 6. Apex, or point of the Beak. | 17. Crown, Summit, or Vertex. | 28. Body, or Lower Breast. | 39. The Tarsus, or Leg. |
| 7. The Chin. | 18. Hind Head, or Occipital Region. | 29. The Belly. | 40. The Front Toes. |
| 8. Upper Throat. | 19. The Nape, or Nucha. | 30. The Vent. | 41. The Hinder Toe, or Hallux. |
| 9. Keel, or Conys | 20. The Ear, or Ear-feathers. | 31. The Tail Feathers. | 42. Upper Tail-covers. |
| 10. } Coloured Bands, usually | 21. The Throat. | 32. The Under Tail-covers. | |
| 11. } called Bridles and Stripes. | 22. The Breast. | 33. Spurious Quills. | |

of the head, forming that part which is usually occupied by the crest in birds so ornamented. The *hind head* (18) commences at the declivity of the skull; its lower portion is called the *nape* (19).

On the sides of the head the following parts have received distinct names:—The feathers that cover the ears, to save repetition, are usually called the *cars* (20): they are generally rather more rigid and their webs more disconnected than the surrounding feathers. The space between these and the corner of the mouth (usually called the *gape*) (13), is termed the *check*.

The parts of the NECK are thus designated:—The back of the neck is called the *upper neck*, or *nucha* ⁽²³⁾, beneath which is the *lower neck* or *auchonium*. The under-side of the neck is divided into three regions; first, there is the *chin* ⁽⁷⁾, or that small space just beneath the lower mandible; to the chin succeeds the *upper throat* ⁽⁸⁾, between which and the broad part of the body is the *lower throat* ⁽²¹⁾.

The BODY presents the following regions: first there is the *breast* ⁽²²⁾, which extends over the space which covers the breast-bone. To this succeeds the *belly* ⁽²⁹⁾, which is terminated by the *vent* or *crissum* ⁽³⁰⁾. Immediately behind the vent are the *under-tail covers* ⁽³²⁾, which are frequently of a different colour from the surrounding feathers.

On the upper aspect of the body we have the *interscapular region*, sometimes called the *back* ⁽²⁴⁾, to which succeeds the *lower back* ⁽²⁶⁾, which terminates at the *rump*, or that part where the *upper-tail covers* ⁽⁴²⁾ are inserted.

Last of all comes the TAIL, composed of long stiff feathers, called the *tail-feathers* ⁽³¹⁾, concerning which it is only necessary to observe that the two middle tail-feathers are the *intermedial*, while those on the sides are the *lateral* tail-feathers.

The WING of a bird will be found to present a structure worthy of our highest admiration. The object aimed at in the arrangement of its different parts is evidently to obtain a very large and firm expanse of surface, by employing the smallest possible quantity of material. For the purposes of flight it is obviously necessary that the superficial extent of the wings shall be sufficiently ample, not only to sustain the weight of their possessor in the thin and yielding element in which it flies, but, by the vigour of their stroke and the violence of their impulse, to propel the bird with a rapidity proportioned to the occasion, and, moreover, by the lightness of their touch and the accuracy of their movements, to steer and steady its course through all the varied evolutions whereby it is enabled to capture prey, or sportively display the wonderful activity conferred upon the feathered tribes.

We have already seen, while examining the construction of the skeleton, that the bony framework of the wing essentially resembles that of the human arm, and that the limb when stripped of its feathers is no more adapted for flying than our own. The needful expansion is obtained altogether by the addition of the quill feathers, which, as explained in a preceding page, combine in their structure all the qualities requisite for the intended purpose, lightness, firmness, strength, elasticity, and extent of surface: the central part of the arm or wing forms merely a basis of support, into which the quills and other appendages to the wing are securely implanted. It will therefore be easily understood that the importance of the individual quills as instruments of flight will depend very much upon the position they hold in the wing, of which they form so considerable a portion, and, consequently, that they have received names expressive of their relative efficiency. Those that are affixed to the bones representing the hand (Fig. 12, *p, q q*), by the length of their stroke, and the peculiarity of their arrangement, are obviously of primary importance, both from their size and the situation they occupy, and have consequently been named the "*primaries*," or the "*primary quills*," (Figs. 2, *f*; 13 ³⁵); they might be called with equal propriety the "*hand-quills*," a term more particularly expressive of the parts to which they are attached. Upon the relative length and other proportions of the primary quills the shape and mechanical power of the instrument principally depend; if the first primary be the longest, the termination of the wing is sharp and pointed (*acuminate*), as in most birds that are remarkable for the swiftness of their flight; whereas if the second, third, or fourth of these quills should exceed the others in this respect, the wing becomes more and more rounded (*obtuse*), and the perfection of its action visibly deteriorated.

The "*Secondary Quills*," or "*Secondaries*" (Figs. 2, *c*; 13, ³⁴), are exclusively sustained by the bones of the fore-arm (Fig. 12, *m, n*); from their situation being much nearer to the shoulder-joint



Plate 1. Cassin's Bunting Eggs

1. Tyrant Shrike (*Tyrannus intrepidus*).—2. Virginian Chordeiles (*Chordeiles Virginianus*).—3. Cow-bird (*Icterus pecoris*).—4. Crimson Honey-creeper (*Myzantha garrula*).—5. Masked Weaver-bird (*Ploceus laniatus*).—6. Fire-crested Wren (*Regulus pyrocephalus*).—7. Rice-bird (*Paddy oryzivora*).—8. Variegated Grackle (*Quiscalus versicolor*).—9. White-tailed wheatear (*Saxicola leucura*).—10. The Wittal Oriole (*Oriolus galbula*).—11. The Alpine Accentor (*Accentor Alpinus*).—12. Nordman's Glareole (*Glaucola Nordmanni*).—13. Alpine Tit (*Parus Alpinus*).—14. Crested Tit (*Parus Cristatus*).—15. African Parra (*Parra Africana*).—16. The Piririguan Tick-eater (*Crotophaga Piririgua*).—17. Ptarmigan (*Lagopus Sotius*).—18. Scapulated Crow (*Corvus Scapulatus*).—19. The Kestrel (*Tinnunculus Cenchrus*).—20. The Senegal Thick-knee (*Ordicnemis Senegalensis*).—21. Rock Kestrel (*Tinnunculus rupicolus*).—22. Corythus (*Corythus enucleator*).—23. The Red-legged Stilt-Walker (*Himantopus rufipes*).—24. The Stone Thrush (*Turdus saxatilis*).—25. The Silk-tail (*Bombycilla garrula*).—26. Long-tailed Tit (*Parus biarmicus*).—27. The Wall-creeper (*Tichodroma muraria*).—28. The Troopial (*Aelanus phaniceus*).—29. The Yellow Bunting (*Emberiza Cilia*).—30. The Red-eyed Coccozua (*Coccozua erythrophthalmus*).—31. The Cirl-Bunting (*Emberiza ciris*).

than the preceding, the extent of their sweep is more limited, and their stroke much feebler; they are, consequently, as their name indicates, of secondary importance in locomotion.

The *Spurious*, or *Bastard Quills* (Figs. 2, *e*; 13, ³⁵), are attached to the rudimental bone that represents the thumb (Figs. 2, *g*; 12, *p*); their size is diminutive, and their use in flight comparatively unimportant.

The *Wing Covers* or *Coverts* (Fig. 13, ³⁷) are small feathers arranged in several rows, which overlap and strengthen the bases of the quills; they are often variously coloured, and thus afford important features whereby different species may be distinguished. Besides the above, there are certain conventional terms employed by the ornithologist that will require enumeration. The arm-part of the wing in the living bird is generally known as the *shoulder* (²⁷); the elbow-joint is the *flexum*; while that part of the fore-arm which corresponds to the edge of the wing is denominated the *shoulder-margin* (⁶).

The names appropriated to the different parts of the hinder-limb have been already sufficiently indicated when describing the composition of the skeleton.

There are many birds which have stripes of variously coloured feathers situated above, before, and behind the eye; while others sometimes occur at the base of the lower mandible. To all these distinct names have been appropriated. A *superciliary* stripe is situated *above* the eye, occupying a position analogous to that of the human eyebrow. An ordinary eye-stripe is either *anterior*, *posterior*, or *entire*. It is called *anterior* when it only occupies the space between the eye and the bill; *posterior* when it commences behind the eye, and advances towards or unites with the ear-feathers; and *entire* when it is both posterior and anterior. A *maxillary* stripe commences at the base of the under mandible, and descends on the sides of the neck.

Such is the by no means very long list of names of parts used by the ornithologist in his description, and which in the course of the present volume will necessarily be of very frequent occurrence.

The oil with which birds preen their feathers, and the glands that supply it, constitute a remarkable provision peculiar to the feathered creation. Embedded among the feathers at the root of the tail, there is on each side a small nipple, yielding upon pressure a butter-like substance, which the bird extracts by squeezing the orifice with its bill. By means of the oil, or rather ointment, thus procured, it dresses its feathers, either for the purpose of increasing their brilliancy, or, as in the case of the swimming birds, to make them impenetrable to wet.

The pairing of birds is a feature in their history which draws a broad line of distinction between the feathered tribes and the generality of quadrupeds. Among mammiferous quadrupeds the young derive their nutriment during the earlier period of their existence entirely from the maternal breast, the male parent contributing nothing towards its support; but in the winged races the callow brood derive their supply of food from the industry of both parents, whose united exertions are not more than is requisite to procure the needful supply. In this circumstance we may see a reason for the faithful love of the feathered mate as contrasted with the vagrant disposition of the quadruped. The parental fondness of birds towards their young has escaped no observer; no historian of nature is silent upon this subject. "How well they caress them," says Derham, "with their affectionate notes, lull and quiet them with their voice, put food into their mouths, cherish and keep them warm, teach



Fig. 14.—CHICKEN IN THE EGG, NEARLY ARRIVED AT MATURITY, Showing the little Hammer or "Bill-scale" on the end of its beak, wherewith it is enabled to break through the egg-shell.

them to peck and eat, and gather food for themselves, and, in a word, perform the part of so many nurses deputed by the Sovereign Lord and preserver of the world to help such young and shiftless creatures."

It would lead us far beyond the limits of our space were we to do more than indicate the close relationship that exists between the exalted temperature and warm clothing of the feathered creation and the wonderful instinct which urges them to build nests for the reception of their eggs, or the still more remarkable blind perseverance with which they devote themselves to the task of incubation. "There is nothing," says Paley, "either in the aspect or in the internal composition of an egg which could lead even the most daring imagination to conjecture that it was hereafter to turn out from its shell a perfect living bird. From the contents of an egg would any one expect the production of a feathered goldfinch? To suppose the female bird to act in this process from a sagacity and reason of her own is to suppose her to arrive at conclusions there are no premises to justify." And yet HE who made the egg not only ordained that such should be the result of the simple process of incubation; but, as though to confound scepticism, by giving, as it were, the last touch to HIS inscrutable work, provided the young bird with the means of escaping from incarceration, by attaching to the end of its beak a little hammer, called the "bill-scale," the only use of which is to crack the egg-shell, and allow the little prisoner to come forth. (See Fig. 14.)

With these few prefatory remarks, we leave our author in the reader's hands, at the same time promising that he will find in the succeeding pages a rich store of valuable information.



Fig. 15.—A YOUNG BLACKBIRD SHORTLY AFTER ITS ESCAPE FROM THE EGG, SHOWING THE ARRANGEMENT AND CONDITION OF THE FEATHERS.

CLASSIFICATION OF BIRDS.

THOSE who are familiar with modern works on ornithology will have observed that it is usual to commence the history of the feathered tribes by a description of the vultures—the most disagreeable and least intelligent of the race. Some writers, however, consider the singing birds as entitled to the first place, the remaining members of the heterogeneous multitude being arranged according to the pleasure of individual naturalists more or less acquainted with their subject. For our own part, we recognise in the parrots the qualifications most fitted to entitle them to take the precedence, and it is, consequently, with these that we shall commence our history. Ornithologists, moreover, differ widely among themselves as regards the relation that exists between the parrots and other members of the class to which they belong, either placing them in a group by themselves, in a manner never intended by Nature, or associating them with toucans, woodpeckers, and cuckoos, with which they possess but few characteristics in common. Under these circumstances, we have considered ourselves at liberty to adopt our own views upon the subject, and have, accordingly, constituted for the parrots a distinct order, under the quaint but expressive name of

CRACKERS (*Enucleatores*),

in allusion to the facility with which, owing to the construction of their beaks, they are enabled to crack nuts, and other hard seeds, that form the usual staple of their food.

The order that we have thus thought it advisable to establish is, however, by no means limited to the parrots; it includes various other seed-eating birds, chiefly belonging to the passerine tribes, the resemblance of which to parrots has been in some cases generally acknowledged in selecting the names ordinarily conferred upon them. Thus, the Cross-bills have long been known in Germany as the FIR-TREE PARROTS, and, on the other hand, the epithet of SPARROW-PARROTS, applied to some races of climbing-birds, clearly shows the relationship that exists between these generally dissevered groups.

The birds thus associated will be found to present many features in common. They live chiefly upon vegetable substances, and their strong beaks enable them to break up hard kinds of food, such as nuts, seeds, and grain. They will also eat fruit and leaf-buds, or the tender shoots of plants; many will devour insects; and a few do not altogether reject the flesh of other animals. They are all clever, lively, and active, much attached to the society of birds of their own species, though they do not often cultivate acquaintance with those belonging to a different family. Their great intelligence enables them to live comfortably even under disadvantageous circumstances, and their temperament allows them to fight the "battle of life" very cheerfully. Owing to the diversity of their habits, they are necessarily widely distributed, and some of them are to be met with in every climate; the parrots only are restricted to the torrid zones, the remaining members of the order being citizens of the world. As to the localities they frequent, much depends upon the absence or presence of the trees to which they usually resort, by far the greater number being strictly arboreal, passing their whole lives in flying from tree to tree, and confining their excursions to a very limited district. Only such as live in cold countries migrate; indeed, regular migrations—that is to say, such as take place at stated periods—or

journeys to any considerable distance, are quite exceptional among them. They are, in general, very affectionate and docile; the male has frequently but one mate during his whole life, and nearly all of them brood more than once in the year.

The nests of this order of birds are of very various construction, and the number of eggs never large. The task of incubation usually devolves upon the female, who is cheered and tended by her mate during the period of her seclusion, but he also occasionally shares her labours, and both parents co-operate in feeding and taking care of their young. Many species are considered inimical to mankind, on account of their marauding attacks upon property; and yet the benefits they confer far outweigh any injuries of which they may be guilty. They clear away the seeds of noxious weeds, free the plants from insects; and their lively and cheering presence in the woods, their beauty, their song, and the ease with which they are tamed, together with other good qualities, fully entitle them to our admiration and regard. The flesh of most of them affords an appetising and healthy food, and the plumage of some species forms a beautiful and admired decoration.

PARROTS (*Psittacini*).

If it is ever permissible to compare animals of one class with those of another, we would state our opinion that the parrots hold among birds much the same position as that occupied by monkeys among quadrupeds. The truth of this remark will become obvious as we proceed with their history. Most systematists have considered parrots as entitled to take but an inferior place in the zoological series, founding this opinion upon a single characteristic which they share with many other birds of far humbler endowments; we allude to the prehensile structure of the foot. Parrots, Woodpeckers, Pepper-eaters, Curacus, Barbets, and Jacamars, are all climbing birds; that is to say, they all have two toes placed in front and two directed backwards; and, immaterial as this structure of the foot may appear, it has been deemed a sufficient reason for forming an order embracing several races of most dissimilar form, which present only this one feature in common. Little stress should, in reality, be laid upon this disposition of the toes, from whatever point of view it is regarded, seeing that Woodpeckers, Tree-creepers, and a great number of others that do not possess the scansorial foot, vie with the so-called climbing birds in the facility with which they climb. The three-toed Woodpecker is not inferior in the dexterity with which it can use its claws to any four-toed scansorial species; and we shall, we believe, be giving this climbing foot its proper appreciation if we compare it to and rank it with the flexible tail of some mammalia, the possession of which is not confined to any particular race, but bestowed alike upon arboreal species of the most various kinds. A foot of this description is by no means of such uniform structure as is usually supposed, and, in truth, is scarcely less varied than are the birds themselves; the foot of the parrot, in particular, differs essentially from the pair-toed foot of other Scansores, in the development of the central part, which renders it in its functions comparable to a hand. The parrots, in fact, constitute a distinct and very clearly defined race, their most distinguishing characteristic being found in the structure of their beak, which can never be mistaken for that of any other bird. At the first glance, indeed, the beak of the parrot would appear to resemble that of the birds of prey; but it is, in reality, much thicker and stronger, and also comparatively higher and more symmetrical in its form. The legs are thick, strong, and fleshy, but never long; the tarsus much shorter than the middle toe, and always covered with small scaly plates; the toes are moderately long, and have a thick sole, but this exists only on certain peculiar ball-like elevations; upon their upper surface the feet are covered with minute scales, resembling those of the tarsus; and these scales, as they approach the ends of the toes, become gradually larger, and project beyond the base of the claw upon the terminal joint in the shape of short tubular or band-like plates;

the claws are not long, but much bent and tolerably sharp, never very powerful. The structure of the wings is in exact correspondence with that of the feet; the bones are of moderate length, but strong; the pinion feathers tolerably numerous—twenty to twenty-four. The compactly formed primary quills are seldom long, but so disposed that the outspread wing is generally pointed; the tail-feathers vary considerably in different species, both as regards length and shape. The general plumage is remarkable on account of its compactness; it consists of few feathers, but these are usually of large size, with the exception of those covering the head, which are small. The eye is in many instances surrounded by a naked patch of skin, which during life is usually powdered over with white dust. The body feathers are each furnished on the under side with a large downy appendage. The coloration of the plumage, notwithstanding its great diversity, will require notice, as presenting a feature very distinctive of the different races of parrots. The prevailing tint is a more or less vivid leaf-green; but we also meet with hyacinth, blue, purple, red, golden yellow, and at times darker hues; their distribution is also characteristic, more especially the frequent occurrence of complementary colours upon the upper and under sides of the same feather—blue-violet, dark blue, light blue or green above, with light yellow, orange-yellow, cinnabar red, or purple underneath. Not less peculiar is the frequent concealment of glowing tints among others which are less conspicuous, as, for example, in the case of some Cockatoos in which we meet with feathers having their lower portion and their downy roots of a deep cinnabar red or brilliant yellow, and yet this portion is seldom visible, on account of the length of the white feathers among which it is hidden.

The extraordinary intelligence exhibited by some parrots is particularly remarkable; it is, indeed, their sensible behaviour, not their form, that makes us regard these creatures as representatives of the *Quadrumana*. The parrot has, superadded to the form of a bird, all the qualifications and troublesome propensities of the monkey—humoursome and fickle at one moment, gentle and agreeable at the next; it is intelligent, active and circumspect, provident and crafty, very quick in discernment, and possessed of an excellent memory; on this account it is eminently susceptible of instruction, and may be taught almost anything. On the other hand, it is choleric, malicious, spiteful, and deceitful; it forgets injuries as little as it does kindnesses; it is cruel and inconsiderate to creatures weaker than itself, tyrannically ill-treating the helpless and unfortunate, as does the monkey. It has been the fashion to rank parrots as inferior to many other birds, because they do not exhibit such conspicuous capabilities of locomotion; they are, nevertheless, very well endowed, even in this respect. The larger species fly with apparent heaviness, but with considerable rapidity; the smaller, wonderfully well—so well, indeed, that we have been almost consoled for the loss of a favourite bird whilst watching the beauty of its flight. Very many appear to be quite out of their element when upon the ground, they seem to hobble rather than to walk, but there are some Ground Parrots that run swiftly and with much facility; and Gould makes mention of a Grass Parrot that he saw running upon the ground like a plover. The capability of hopping from bough to bough is an accomplishment in which parrots are deficient, nevertheless they have their own mode of progression among the branches; any considerable space they fly over, but smaller distances they pass by climbing, and that with considerable rapidity, unwieldy as some of them appear; helping themselves along by means of their beak, as well as their feet, while other birds use their feet only. Parrots are unable to swim, and are quite incapable of diving. The bill is far more movable than that of any other bird, and is useful for many purposes. Their voice is harsh and screaming, but yet not entirely destitute of an agreeable sound when heard in their native haunts. Some species will learn to whistle tunes with remarkable clearness and accuracy; the faculty which they possess of imitating the human voice and speech is well known—their performance, indeed, is wonderful; they do not babble, they speak, and seem to know the meaning of the words they use.

With the exception of Europe, parrots are to be met with in all parts of the world, more especially in tropical regions; one American species ranges as far north as 42° , and another is found in the southern hemisphere, as far as the inhospitable wastes of Tierra del Fuego, in 53° south latitude. Cockatoos are known to inhabit New Zealand and Macquarrie's island, 52° south. In Asia and Africa, the parrots are principally confined to the limits of the torrid zone; in China, they rarely pass 27° north latitude, and in India, at furthest, only extend to the foot of the Himalaya mountains. In Western Africa, they rarely go beyond 16° north, and in Eastern Africa, according to our information, not further than 15° ; but towards the southern hemisphere they probably are to be met with at a greater distance from the equator.

Generally speaking, the woods are their favourite haunts; but this is by no means universally the case. There are certain species, for example, which only frequent tree-less plains or wide steppes; in the Andes some are to be found living far beyond the region of trees, even at an altitude of 11,000 feet above the level of the sea.

In the north-east of Africa, according to our own experience, they almost exclusively reside in places frequented by monkeys, insomuch that apes and monkeys seem to be their inseparable companions. The more extensive the forests—that is, the richer they are in vegetation—the more these birds abound; indeed, in the tropical forests, they constitute a large—we might almost say, the largest—proportion of the feathered inhabitants. The same remark applies to Australia, as well as to many localities in India, and in part also to Africa; in these countries parrots are as numerous as crows are in Europe, and as common as sparrows.

They would seem to understand how to make themselves conspicuous; and while they deafen the ear with their discordant cries, enliven the dark shades of tropical forests with their lavishly-coloured plumage. “It is impossible,” says Gould, “to describe the enchanting scene afforded by certain parrots, more especially by those adorned with feathers of glowing red, as they wheel their varied flight among the silver-leaved gum-trees of Australia, their gorgeous plumage standing out amid the surrounding scenery with wonderful effect.”

“Morning and evening,” writes Schomburgk, “countless multitudes may be seen at a considerable height, making an insufferable noise; one afternoon I saw such a prodigious flight descend upon the trees by the river-side, that the branches bent low under the weight of the birds.” “It is necessary to have lived in these countries, more especially in the hot valleys of the Andes,” says Humboldt, “to believe it possible that the shrieking of the parrots actually drowns the roar of the mountain torrents as the waters leap from rock to rock. What would those wondrous tropical forests be without parrots? Lifeless gardens of enchantment, a wilderness of silence, a solitary desert; by these birds they are awakened and kept alive, for the parrots know equally well how to find occupation both for the ear and eye of the traveller.”

Except in the breeding season, parrots live in society, or, we might rather say, in great flocks; they select a locality in the forest as their settlement, and thence make daily excursions to considerable distances. Early in the morning they simultaneously quit their roosting-place, to invade the same tree or the same field in search of food, stationing sentinels, whose duty it is to protect the community from a sudden surprise. They pay instant attention to any voice of warning, and when alarmed, immediately take flight, either all together or shortly after each other.

“At the first glimmering of the clear morning sun of the tropics,” says the Prince von Wied, “the parrots rouse themselves from their sleeping-places, dry their wings, which have become wetted with the dews of night, and playfully call aloud to each other; then, after describing many sweeping circles above the high woods, they quickly depart in search of the morning's meal. In the evening they invariably come back again to their usual roost.”

Le Vaillant tells us that in south-eastern Africa the native parrots fly in little flocks in search of food, bathe about noon, and hide themselves among the foliage during the overpowering heat of the sun. Towards evening they disperse themselves, after which they again bathe, and then fly back to the same roosting-place from which they had departed in the morning. These roosting-places are very various—sometimes the thickly-leaved top of a tree, sometimes a rock full of holes, often a hollow tree trunk; the situation last mentioned seems to be especially sought after. “Their sleeping-place,” says Audubon, speaking of the American parakeets, “is a hollow tree, or the hole chiselled out in some tree’s trunk, to be the nestling-place of the larger woodpeckers, that is, in case these are not occupied by their true owners. In the gloaming large flocks of parrots assemble around old hollow sycamores, or other trees of similar character; and may be seen immediately in front of the entrance clinging to the bark, until one after another they disappear through the hole that leads into the interior, in order to pass the night. When a hollow of this description is not sufficiently large to accommodate the numbers that are assembled, those that come last are content to suspend themselves by their bill and claws from the bark before the entrance.

We have ourselves, in the primitive forests around the Blue River, in Africa, repeatedly watched the parrots at twilight, slipping one after another into their hole, and have observed them ranged with great regularity around the many perforations in the trunk of some old *Adansonia*.

In India, the Collared Parrot, as Layard informs us, sleeps among the thickets of bamboos. “All Parrots, Bee-eaters, Grakles, and Crows from districts extending for many miles around, pass the night in flocks among the great bamboo plantations, where the dull rushing sound caused by their flutterings, constantly heard from sundown till dark, and from the first grey dawning in the east until long after sunrise, might almost be supposed by the observer to proceed from numerous steam-engines in full work. Many of these flocks returning late in the evening from their excursions, fly so near to the ground that they scarcely clear the obstacles to their course; indeed, they do not always succeed in doing so; for, several nights together, we have picked up parrots which had flown against walls or similar obstructions, and had been killed in consequence.”

Layard gives a very lively account of the behaviour and doings of the Alexander parrot (a species commonly met with in Ceylon), at one of their sleeping-places.

In Chilau, he relates, that he has seen such massive flights of these birds winging their way to their roosting-places among the cocoa-nut trees that overshadow the market-place, that their cries completely drowned the Babel-like confusion of tongues heard among the buyers and sellers in the streets. He had previously been told of the flocks which thus pay their nightly visits, and placed himself, accordingly, towards evening, upon one of the neighbouring bridges, in order to form a calculation of the numbers that might make their appearance in a certain given direction. At about four o’clock in the afternoon they began to arrive; scattered swarms were seen wending their way homewards, to these there succeeded others still more numerous, and in the course of half an hour the homeward stream was apparently in full flow. He very soon found that it was impossible even to count the flocks, which seemed gradually to unite into one great living, roaring torrent. Some flew high in the air, until they were immediately over their roosting-place, and then suddenly plunged down, wheeling round and round towards the tree-tops, of which they were in search. Others crowded onwards, flying close to the ground—indeed, so closely that some of them nearly grazed his face. They swept along with the rapidity of thought, and their dazzling plumage seemed to be lit up with gorgeous brilliancy, as it glanced in the rays of the sun. He waited at his post of observation until the evening closed in, and he could see no longer, but even then the flight of the birds as they made towards their nests was audible. When he fired off a gun, they rose with a sound like that of a furiously rushing wind; soon, however, they again settled down, and commenced an indescribable



COCKATOOS (*Cacatua*).

hubbub. The shrill screams of the birds, the noise caused by the fluttering of their wings, and the rattling of the leaves of the palm-trees was so deafening, that he was heartily glad when he escaped from such a turmoil, and took refuge in his own house.

Next to a safe sleeping-place, the presence of trees thickly crowned with foliage is an essential requisite for the comfortable lodgment of parrots; this they require, not so much as a protection against the weather, as for a secure hiding-place. Of all things they like warmth, nevertheless they do not absolutely avoid a cool temperature, and still less are they afraid of wet, at least for a time.



COLLARED PARROT (*Palæornis torquatus*).

“During the heavy tropical rain-storms that sometimes darken the air,” says the Prince von Wied, “it is not uncommon to see parrots sitting motionless upon the dead branches at the very top of a tree, uttering cheerful screams, as the water streams off from their plumage; there may be dense foliage, and thick boughs immediately beneath, under which they might easily find shelter, but they prefer the warm shower, and seem to enjoy the wetting. No sooner, however, has the rain ceased, than they appear equally desirous to dry themselves, and to rid their plumage of the moisture.”

In fine weather it is quite otherwise; they then decidedly prefer the shelter of the thickest trees,

either as a protection from the burning heat of the sun, or for the purpose of concealment, and hasten to them at once on the slightest alarm. They know what an excellent protection to them, clothed as they are in leafy green, the verdant bower offers; and, truly, when thus ensconced, they are tolerably secure from observation; a man may know that there are fifty of them in a tree, and not see one. In playing their game of hide and seek, both the colour of their feathers, and the cunning so peculiar to all parrots, contribute to their safety;—they do not want to be seen. One of their company has just at the right time observed the approach of an enemy; he gives a sign, they are all at once silent, and withdraw themselves towards the centre of the tree; noiselessly, they climb to that side of the summit opposite to the spot where the enemy has appeared, they then fly off, and it is only when they are a hundred yards away that they seem to recover their voice, and scream to their hearts' content, apparently rather out of bravado, after having thus outwitted their pursuers, than for the sake of calling upon their companions. This clever game they play more especially when they have settled on some tree for the purpose of enjoying the fruit, as it is then that their thievish design is carried out with the greatest cunning. "Whilst on the wing," says Pöppig, "the large golden green Araras of the Andes will arrest their flight to come down upon the scarlet Coral trees (*Erythrinæ*) and the yellow *Tachia*, the heads of which they eagerly devour. Their cry is positively fearful; nevertheless, they are quite clever enough to understand that it would be dangerous to give utterance to it when they are just about to plunder some ripening field of Indian corn. At such a time, every one of them will repress its inclination to make a noise, giving utterance to no sound except a sort of murmur, with which it accompanies its proceedings, as it prosecutes its work of destruction with surprising quickness. "The sportsman, or even the exasperated Indian, finds it by no means an easy task to surprise the thieves, seeing that two of the oldest birds are always set as watchmen upon the highest trees in the neighbourhood. The first note of alarm is immediately answered by a general, half-uttered cry from the assembled pilferers; the second is responded to by deafening screams, raised by the whole flock as they fly away, and it is only when their enemy has departed that they begin anew their destructive raid."

The presence of a numerous flock of parrots is generally only betrayed by the empty husks that rattle as they fall against the broad leaves of the bushes, producing a sound that can be heard from some distance.

Le Vaillant has noticed the silence of these birds at the approach of a suspicious-looking visitor, on the occasion of their mid-day assemblages. They will keep themselves so still that not the slightest sound can be heard to proceed from among them, even though thousands should be congregated together. On the discharge of a gun, the whole multitude will immediately take wing, and rise into the air with deafening cries, as though rendered furious by the interruption.

Far different is their conduct when they have become aware that the good-nature of man leaves them unmolested. In India, as Jerdan informs us, they not only come boldly into the towns, but will settle down, without the slightest shyness, upon the tops of the houses, and from this elevation descend to plunder the gardens and fields in the neighbourhood. Incredibly great, and justifying the most efficient means of defence on the part of man, is the destruction caused by parrots; nothing is safe that is not constantly guarded. Like the monkeys, they waste a great deal more than they eat.

The multitudes which assemble upon the fields or fruit trees devour all they can upon the spot, bite off still more, and carry a few ears of corn up into the trees, in order peaceably to fill their much craving stomachs. When they make their appearance in the orchard, they search every tree that is in fruit, and pluck such as may be ripe; bite a bit off, and if it does not exactly suit their very refined taste, throw it down upon the ground and take another instead. While feeding they generally climb the branches from below upwards, and as soon as they get to the top fly away to another

tree, sweeping over the ground without ever moving their wings. Arrived at this second tree they recommence the work of destruction just as before.

In North America and in Chili they attack the fruit before it is ripe, in search of the as yet milky pippins, and we may imagine the damage thus caused. According to Audubon, the corn-stacks in the fields are sometimes the objects of their attack ; they will hang upon them, and draw the ears out of the sheaves, thus sparing the owner the trouble of threshing. Some prefer one kind of seed and some another ; but all agree in spoiling everything that man sows or plants for his own use ; and on this account anything like friendship between the farmer and the parrots is quite out of the question.

After having satisfied their hunger in this manner they go in search of water to drink ; and, according to Audubon and Schomburgk, do not refuse salt, or at any rate brackish water. Besides occasional rain-baths, they will bathe in lakes, washing themselves, Le Vaillant tells us, until they are soaked through, as with a heavy rain. We also learn from Audubon that they enjoy playing in the sand like fowls, covering their plumage with dust, and will creep into king-fishers' holes, in order to find it. They are fond of salt ground, and are always to be found near the saltworks in the forests.

The incubation of these birds takes place during the months that correspond in their native lands to our spring. The larger kinds appear to lay but once in the year, and then only two eggs ; though the Australian Grass Parrot and some others are exceptions to this rule, inasmuch as they will lay regularly from three to four eggs, and in some cases from six to nine, twice or even three times during the year. The eggs are always white, smooth, and round. Holes in trees are the favourite nesting-places of these birds, but not exclusively so ; some American kinds will lay in holes in the rocks, and the Indian parrots in crevices in old buildings, pagodas, monuments, or houses.

Audubon assures us that several females will lay in one hole ; but we consider this as very doubtful, though it is true that parrots prefer breeding in society, sometimes even associated in immense flocks.

Molina speaks of a large settlement of these breeding birds in Chili, and Pöppig of another, probably of the same species. "These several settlements," says the last-mentioned naturalist, "must be very astonishing to those to whom they are new. Fancy yourself, about mid-day, wearily approaching a precipice, believing yourself to be perfectly alone, that deep silence reigning around you that always indicates noon in these tropical regions, when all animals seek repose in sleep ; a kind of growling strikes your ear, but you look in vain for any creature that could produce it ; suddenly you hear the parrots' cry of warning, answered by many others, and before you are awake to your true position, are surrounded by swarms of these quarrelsome birds, flying about in a close circle, and in evident anger, threatening to strike you. From all the innumerable holes upon the face of the rocks little round heads are protruding, looking comical enough ; and those that do not come out unite their screams to the general uproar. Every opening indicates a breeding hole, that has been excavated by its owner in the clay met with between the strata of the rocks. At times many hundreds may be counted."

These colonies are always so cunningly situated, that it is impossible for a beast of prey to approach them. Such settlements could not be made in the woods, as the trees would not afford a foundation strong enough to sustain their weight.

In general, it is in old trees that parrots make their nests ; in Central Africa the *Adansonia* is preferred, more especially should it grow on the outskirts of a forest. We once saw a group of monkey-bread trees in the Kordofanian steppes inhabited in this manner, although not yet covered with their leaves.

As it is not always possible to find a trunk whose interior has been hollowed by some friendly woodpecker, the parrots are often forced to excavate their own nesting-places, and then it is that they show what an available instrument their beak can be. It is the female who almost, but not exclusively, makes the hole; at this work she shows herself most skilful; she hangs, like a woodpecker, from the bark, and gnaws, rather than cuts away, one shred after another, until the dwelling is completed; this labour often occupies several weeks, but with patience the end is at length attained. The hole is the principal matter, the nest does not need much making; a few chips picked from the ground are all that is required as a bed on which to deposit the eggs; even a hole that leaves much to be desired in the way of convenience will content these very easily satisfied parents. "From the white stem of a Trimi-palm," says Pöppig, "I once saw a brilliant light blue tail depending; it betrayed the Yellow Arara, who was busy with her strong beak enlarging a woodpecker's hole, out of which her ell-long tail hangs whilst brooding." The female generally sits alone, and is fed and entertained by her mate during the whole time of incubation.

Among the smaller kinds of these birds, the brooding season lasts from eighteen to twenty, and with others nineteen, twenty-three, or twenty-five days.

The young are perfectly helpless when they leave the egg, but their growth and development is rapid. At first they are very imperfectly fledged, but in from five to six days the feathers begin to sprout, and they open their eyes within eight or ten days of their birth. The warbling Grass Parrakeet leaves the nest thirty-three days after being hatched, and may be seen flying about two days later. Both parents feed the young and tend them for some time after they have left the nest.

The food, if corn, is softened in the parent's crop before it is put into the beak of the young bird. Schomburgk tells us that a pair of parrots which had settled near his encampment in the wood, only fed their young twice in the day, once at eleven in the forenoon and again about five in the evening. As soon as they arrived they perched upon a branch near the hole, and if they fancied themselves watched would sit quite still, until they thought that a favourable opportunity occurred for stealing in unobserved.

The parents are by no means deficient in tender care for their progeny, and will shield their offspring from danger with most self-sacrificing courage. Some species will attach themselves with great tenderness to deserted birds; not merely to those of their own family, but to any helpless orphan, even although belonging to another species.

Cunningham tells us that the surgeon of the *Triton*—a ship plying between England and Australia—had a Blue Mountain Parrot, and a very beautiful smaller one, that he had taken from its nest so young that it was unable to feed itself. Under these circumstances the elder bird undertook to give it food, and watched over it with the greatest anxiety. The mutual friendship of these creatures seemed to increase as time went on; most part of the day was spent in caresses; they trimmed each other's feathers, and the old bird would spread her wings over her little charge with every indication of solicitude. Indeed, their affectionate demonstrations soon became so noisy that they had to be separated, in order that the passengers might not be annoyed, and the young one was placed in a cabin with several others.

After a two months' separation the elder parrot succeeded in escaping, and was guided to the cabin by the voice of its young protégé, to whose cage it clung. From this time the friends were not parted, but a fortnight later the young one died, in consequence of a wound caused by a fall. Its friend was silent from that hour, and did not long survive its little charge.

Parrots attain their full beauty of plumage, and commence laying by the time they are two years old; some of the smaller kinds breed within the first twelve months, but, notwithstanding this, live for many years, and have been known to long survive the family in which they passed their youth.

In countries where parrots abound they are destroyed with unrelenting perseverance, and this simply for the protection of property. "People must not imagine," says Audubon, "that all the injuries they are guilty of meet with no reprisals; on the contrary, these birds are slaughtered in great numbers during their predatory visits to the farmers. Armed with his loaded gun, the exasperated proprietor creeps amongst them, and brings down eight or ten at the first shot; the survivors rise screaming into the air, fly about in circles for three or four minutes, but return, and surround the bodies of their fallen companions, uttering loud cries, and this is repeated again and again, until so few remain that the farmer does not think it worth while to waste his powder and shot upon them. Hundreds are thus destroyed in the course of a few hours, and baskets filled with the spoils."

Various are the expedients adopted for their destruction in different parts of the world. The Chilians rush out with all speed when they see the parrots settling, and attack them with sticks. The Australians rouse them from their sleeping-place, and then throw their boomerangs amongst the retreating flock. Adventurous men let themselves down the rocks in which the South American species breed, to draw the young out of their holes with hooks; or shooting parties and hunters endeavour to steal upon them unawares. When it is found impossible to climb the trees on which they breed, these are cut down, and nets and limed twigs placed around to catch the young. The flesh of the slaughtered birds is often eaten, although hard and tough, or is made into excellent soup.

Very frequently they are sought for on account of their splendid plumage. "There is nothing more natural," says the Prince von Wied, "than this most simple and pleasing decoration, to the use of which savages are much addicted; and very beautiful are the articles made from feathers by entirely untaught tribes; many of the aborigines of Brazil particularly excelled in this kind of work." The love for parrot feathers is very ancient. "In long forgotten times," says Pöppig, "the inhabitants of the tropical forests brought arara feathers as tribute to the Incas, for the decoration of their palaces, and early historians inform us that these feathers and the 'Koka' were the only produce which led to the peopling and cultivation of the formidably hot districts in which they abound."

It is said that Alexander the Great brought tame parrots from India, and in later times these birds were taken in great numbers to Rome, where the favour in which they were held was carried to such excess that it was often reprov'd in the open forum. "Oh, unhappy Rome!" cried that severe censor Marcus Portius Cato; "have we lived to see the day when our women nurse dogs upon their laps, and our men go about with parrots on their hands?" The Romans kept them in cages made of silver, tortoise-shell, and ivory, and had tutors who particularly taught them to utter the word *Cæsar*; in those days the price of a parrot that could speak exceeded that of a slave. Ovid did not consider it beneath him to sing their praises, and Heliogabalus thought he could not set anything more delicate than parrots' heads before his guests. In Nero's reign, it would seem, only Indian species were known; but probably at a later period African parrots were introduced.

During the Crusades these birds adorned the houses of the rich, and the first discoverers of America found tame parrots in the huts of the natives. Von Schomburghk tells us, that in their native lands, when tame, they are allowed to fly about, without having their wings clipped. "I saw many," he writes, "which joined the flocks that were flying over the village during the day, and returned to their master's hut at night."

In comparison with such a life as this the parrots brought to Europe have a sad fate; but they suffer most before their destination is reached. The Indians inhabiting the primitive forests capture

them in order to exchange them for European articles, and hand them over to some sailor in the nearest harbour, who knows nothing either of the necessary food or of the care they require; not more than half the number that are shipped survive the long sea voyage, and many of those that reach Europe in safety perish in the dark, dirty, pestiferous shops of the dealers. It is only when the bird receives especial attention that its fate is ameliorated; but by that time it has often become distrustful, violent, and ill-behaved, and only loses these rude ways after long care and kind treatment; it is, however, very quick, soon learns to adapt itself to its altered position, and becomes accustomed to all kinds of diet. At first hemp or canary seed is acceptable, but after a time the parrot grows more dainty, and if supplied with sweets becomes such an epicure that any less delicate food is distasteful; it is easily habituated to almost anything that man enjoys, even to tea, coffee, wine, or beer, and will quite intoxicate itself with strong drink. These remarks do not apply to the little Australian Ground parrot, which refuses everything except grass seeds and the leaves of plants. Most of the larger kinds enjoy hemp-seed, hard-boiled rice, ants, maize, lettuce, cabbage, fruit, small kinds of millet, canary-seed, and the leaves of plants; such food as this keeps them well and thriving. Bitter almonds and parsley, according to Kùle, are poisonous to these birds.

Many degrees of intelligence are observable among the members of the Parrot tribe, and the same species often contains individuals of very varied capabilities; but the memory of all is generally excellent. As regards teaching them to speak, the most important point to be attended to is that they should at first be kept closely confined and constantly instructed; any extent of freedom may, however, be accorded when their education is nearly completed. On the contrary, should the owner desire the parrot to breed, a certain amount of liberty is needful. For this purpose the first requisites are space, quiet, and a suitable tree for the nest. A tolerably roomy chamber in which they may live throughout the year, and the trunk of a hollow tree with convenient holes, the wood being of a soft kind, afford all that is necessary in these respects.

The classification of parrots is particularly difficult, on account of the great number of species, and it is almost impossible to indicate distinct boundaries between the different families. It will, however, answer our present purpose to arrange them under the general titles of TRUE PARROTS (*Psittacinæ*), MACAWS (*Arainæ*), LORIES (*Lorinæ*), COCKATOOS (*Cacatuinæ*), and GROUND PARROTS (*Pezoporinæ*), all of which differ from each other more or less in their habits and modes of life.

THE TRUE PARROTS (*Psittacinæ*)

are inhabitants of the woods, only leaving them to linger on their outskirts, and from thence to contemplate the tempting fields of fruit, upon which from time to time they make a raid. Many of them never quit their dense forests, whilst others of the smaller kinds prefer the less shady trees or open country.

These birds belong to Africa and the neighbouring islands, and also to various islands in the Pacific Ocean; they are likewise met with in great numbers in South America. The family is very rich in species; we shall, however, only select a few from the many, seeing that the mere description of their plumage would be wearisome, and we scarcely possess any information with regard to their mode of life in their native haunts. There can be no hesitation in placing the "JAKO," the GREY, or RED-TAILED PARROT (*Psittacus erithacus*) first upon the list, for it may be considered as the type of the race; it is true that it has neither the quickest flight nor the gayest plumage, but it combines in itself that equal excellence of all the attributes of a parrot which gives and will retain for it a pre-eminence among its congeners.

THE JAKO.

The GREY PARROT exhibits only two colours in its plumage. The tail is of a deep Cinnabar red, and all the other feathers are ash-grey or greyish blue, bordered with a lighter shade; near the head and neck the light borders of the feathers are somewhat wider than elsewhere. The beak is black, the eyes light brown, the bare places round the latter of a whitish colour. The male and female do not differ in hue, and but little in size, the male being the largest; its average measurement is twelve inches in length and twenty-five inches across the wings, the tail three inches and a half, the wing from shoulder to tip eight inches and a half; when folded, the wing extends some lines beyond the tail.

Very little is known of these birds in their wild state, although they are brought to Europe in far greater numbers than any other species. We learn from Heuglin that the habitat of the Jako extends from the western coast of Africa, deep into the heart of that continent, and reliable naturalists have seen it in great numbers in Wan and Bongo, up to 8° north latitude. It does not appear to penetrate further east, and is quite unknown in eastern Soudan; how far north and south it is found is at present doubtful. It is worthy of remark that these birds were not many years ago imported from Guinea to Madagascar, where they became naturalised and increased so rapidly, that at the commencement of the eighteenth century their numbers rendered them a perfect scourge to the inhabitants of the island of Bourbon and the Mauritius. The Grey parrot is one of the most highly-prized of our domestic favourites, and well merits the esteem in which it is held. Its praises have been sung in all languages, and every work on natural history relates some anecdotes of its surprising cleverness.

Perhaps the most celebrated of the species is one which lived for many years in Vienna and Salzburg, and luckily found an exact and industrious observer of its performances.

The Count Courcy Droitaumont was the first who, in the year 1835, in Oken's "Isis," gave us such particulars of its attainments as awakened astonishment in all quarters. This account has been attested by the late possessor of the parrot, President Kleimayrn, at the wish of Lenz, who afterwards published the following narrative:—"Jako noticed and criticised everything that passed before him, gave the proper answer to a question, did as he was bidden, saluted people who entered the room, and made his adieux to those who were taking leave; he wished you good morning and good night at the proper times, and asked for food when he was hungry.

"He called all the members of the family by name, and preferred some of them to others; if he wanted me (his master), he called out 'Papa, come here,' and whatever he said, sang, or whistled, was done as a human being would do it. There were times when he seemed inspired like an improvisatore; his voice then sounded like that of a speaker heard from a distance, when too far off to enable you to understand the words.

"Sometimes he would be marvellously polite—'Good morning, reverend sir!' 'An almond, if you please, reverend sir!' 'Do you want an almond?' 'Should you like a nut?' 'Shall I have some food soon?' 'Have you got something?' Occasionally he would threaten—'Be off, you rascal; are you going home or not?' 'Be off, you thief, or wait till I come!' 'You idiot!' 'You clown!' At times he was self-complacent—'Good little prattler!' 'You are an excellent little parrot!' 'Take time, neighbour, take time!' &c. If any one knocked at the door he would call very loudly and distinctly (just like a man) 'Come in! Come in, Herr B.!' 'What orders have you?' 'I am your humble servant!' 'I am delighted to have the honour! quite delighted to have the honour!' Or he would tap on his cage and say the above to himself.

"He could imitate the cuckoo excellently. Occasionally his conversation was rather discursive.

'Look out!' 'Come out!' 'Come up!' 'My dear little parrot!' 'Bravo, bravissimo!' 'Are we not going to dinner?' 'Let us go to the window!' 'Hieronymus, stand up!' 'I am going!' 'Long live the Emperor!' 'Where have you been?' 'Will you kindly excuse me, but I thought you were a bird?' Whenever he bit or spoiled anything, he would say, 'Don't bite!' 'Be quiet, do!' 'What have you been doing?' 'Wait a minute, you rascal; what have you been doing?' 'I am coming after you!' 'How are you, you little chatterer?' 'Have you got something to eat?' 'I hope



THE JAKO (*Psittacus erithacus*).

you will enjoy it!' 'Hush, hush, good night!' 'Pretty Poll may go out; so come, come, shoot, Poll, shoot!' and then he would shoot, calling loudly 'Puff!' 'There, there, there!' 'Go home, come march, go home directly!' 'I'm coming after you!' He would ring a bell that was placed in his house, and say, 'Who's that ringing? who's that ringing?' 'Why, here's a little dog! a pretty little dog!' Then he would whistle to the dog and say, 'Whistle, little dog!' and ask, 'What does the little dog say?' and then bark. If told to fire, he would say 'Puff!' and give the word of command, 'Halt; right about face; make ready; present; fire! Bravo, bravo!' He never said 'Bravo!' in connection with his faults.

"Sometimes he would cry out, 'What are you shaking me for? What are you doing to me?' and

scream for help, as though being shaken, and call out again, 'Don't shake me, you rascal! Ah! that's the way of the world! alas! alas! Don't shake me, you rascal!' and then laugh with great distinctness. If anything ailed him, he would exclaim mournfully, 'Poor Polly is ill; poor little parrot!' If annoyed, his tone became defiant—'Wait a minute; I'll come and punish you!' If ever he saw the cloth being laid, or heard from a distance that preparations were making for a meal, he would immediately call out, 'Let's go to dinner!' When the family were at breakfast he would ask, 'Am I to have anything? I should like some chocolate!' He would remain quiet as long as his master slept; but if in another room would begin singing and whistling at break of day. In order to see if it would be possible to teach Jako to sing, we selected such words as he could say, and he was soon able to sing a verse of a song; he could put in harmonies, and readily run up and down the scales, and learnt to whistle many scraps and shakes. He never kept to the same key, but would take the air half a tone higher or lower, and yet never utter a false note. Whilst at Vienna he was taught an air from 'Martha,' and on being shown a dance, tried to imitate it by raising one foot after another, and putting his body into dancing attitudes. Kleimayrn died in 1853, and Jako fell ill, as it would seem, from pining after his beloved master. In 1854 he was so weak that he had to be laid in a little bed and carefully tended; he continued, however, to talk incessantly, and after saying, 'Your poor little parrot is ill!'—died."

A young lady has given us the following particulars about another "Jako:"—"The parrot of which I am about to speak was given me by a man who had lived for many years in the East Indies. The bird at first knew nothing but Dutch, but soon learnt German and French, and after a time spoke as clearly as a human being in all three languages; he was so observant, that he often used phrases which had never been taught him, applying them on fitting occasions in the most astonishing manner. He said a number of disjointed Dutch words and sentences, intermixing German quite correctly when the phrase was not forthcoming in the former language. He could ask, answer, and request you to give him something, and thank you for it, varying the use of the words according to the time, place, or person. 'The little parrot wants something to eat!' If he did not get what he wanted, he would immediately scream out, 'I *must* and *will* have something to eat!' And if still kept waiting would begin throwing everything about to vent his anger. He said '*bon jour*' in the morning, and '*bon soir*' in the evening; asked permission to retire, and took his leave of us. When he was carried out, he would say, '*Bon soir, bon soir.*'

"This bird was particularly attached to his mistress, from whom he received his food, and would press his beak on her hand, and say, 'Kiss the lady's hand.' He took great interest in all she did, and whilst she was busied with something would often ask, with most comic earnestness, 'What is the lady doing?' After her death, he evinced great sorrow, and it was only with difficulty that he could be persuaded to take food, or that his life could be preserved. He whistled wonderfully well, particularly the tune, 'Ich dank dir schon durch deiner Sohn,' and sang most beautifully. He would say to himself, 'Polly must sing a little,' and then begin—

" 'Perroquet mignon,
Dis moi sans façon,
Qu'a-t-on fait dans ma maison
Pendant mon absence.'

Or—

" 'Ohne Lieb und ohne Wein
Können wir doch leben?'

Then he would sometimes say—

" 'Ohne Lieb und ohne *maison*
Können wir doch leben.'

Or—

" 'Ein Kuss—*sans façon.*'

The latter version seemed to amuse him so much that he would burst into loud laughter. 'Polly, what does Lottie say?' he would sometimes ask himself, and answer immediately, as though some one else had put the question, 'Oh, my beautiful, beautiful little parrot; come and kiss me.' And this he would utter with the exact tone of endearment used by Lottie. He expressed his conceit by saying, 'Ah, how beautiful I am!' at the same time stroking his beak with his foot, though he was by no means handsome, for he had the ugly trick of pulling out his feathers. On this account he was ordered wine baths, which were administered to him by the help of a watering can. These baths were most disagreeable to him, and as soon as he saw preparations being made he would beg imploringly, 'Please don't make me wet! Poor little parrot! Please don't wet me!'

"He could not bear strangers, and those who came to see him, and wanted to hear him speak, only attained their wishes by hiding themselves. In their presence he was as quiet as a mouse, but chattered incessantly when visitors were out of sight, as though he wanted to indemnify himself for the restraint he had been under. There were people, however, who managed to gain his affections, and he would talk with them when they came, and used even to crack his jokes about them. A fat major, with whom he was well acquainted, was trying one day to teach him a new trick. 'Get upon the stick, parrot; get upon the stick!' commanded the soldier. But Polly seemed sulky. All at once, the bird burst into a loud laugh, and said, 'Get upon the stick, major; get upon the stick!' Another friend of his had not come to the house for some time. The visitor had been talked about, and it was expected that 'Roth,' as he was called, would make his appearance on a certain day. 'Here comes Roth,' said the bird, suddenly, as he saw him approaching through the window, and recognised him from some distance.

"This poor parrot came to an unlucky end; it was given as a present to a relation of its master, who had become superannuated, and had taken a childish fancy to the bird. But it could not endure the parting from all it loved, and died in the course of a few days."

We could tell of many grey parrots that have been brought to great perfection in the art of speaking, but the preceding anecdotes combine all that these birds have been known to do, so we will only observe that their wonderful memory and powers of mimicry have sometimes their disadvantages. Their first teachers are usually sailors, and it may, therefore, be easily imagined that their vocabulary is neither choice nor elegant; unluckily, the best educated birds will often remember these old lessons, and intermix the lowest and commonest words with their pretty phrases and speeches. The parrot can reproduce any peculiar sound with as much ease as it learns words, and will imitate the creaking of a neighbouring door, the barking of a dog, the mewing of a cat, or even an old man's cough.

Mr. Wood tells us that a friend of his had a parrot of this species, which proved herself a most tender and affectionate guardian. In a hedge of roses near its owner's house, a pair of finches had built their nest, and were regularly fed by the family, who were much attached to all kinds of pet animals. The numerous visitors to the rose hedge attracted Polly's attention, and, seeing the food they gave strewed around, she determined to emulate their good example. Being allowed to fly about, she left her cage, imitated the cry of the old finches, and gave the nestlings a part of her food; but these expressions of sympathy did not please the parent birds, who at once deserted their young from fear of the large stranger, so that Polly saw the little ones thus become orphans, and a fine field opened for her fostering care. From that hour she refused to return to her cage, and remained day and night near her adopted children, whom she fed with the greatest assiduity, and had the pleasure of rearing successfully. When the little ones were fledged they used to perch upon the head and neck of their foster-mother, who bore the burden with exemplary care; the parrot, however, received but small thanks, for her young charges had no sooner wings strong enough to bear them than they

flew away. Poor Polly was for some time in bitter distress, but at length found consolation for her motherly feelings in the discovery of some deserted hedge sparrows ; these she conveyed to her cage, where they were soon on the best terms with their adopted parent.

Many American varieties of the Short-tails, usually called GREEN PARROTS (*Chrysotis*), differ from their African congeners, the Jakos, in their prevailing green colour, and in the small size of the bare parts around the eyes. Their body is compact, the beak strongly bent, the tail short, broad, and somewhat rounded ; the wings broad, and strongly formed, reaching nearly to the middle of the tail ; the legs are strong, thick, and fleshy ; the feet powerful, and armed with strong claws, the plumage lies close and thick, the feathers being small and imbricated. Two species of this family are especially well known to us, the Green and the Amazon. They are both large birds, of fourteen inches long, and about twenty-one to twenty-three across the wings ; the tail measures from four inches to four inches and two-thirds ; and the wing, from the shoulder to the tip, seven inches.

THE AMAZON PARROT.

The AMAZON PARROT (*Chrysotis Amazonicus*) is of a brilliant green colour, sky blue on the brow and top of the head, yellow on its cheeks and throat, and red on the shoulders ; the side tail-feathers are blood-red beneath, the beak deep horn grey, the cere blackish, the feet ash grey, powdered with white, and the iris externally bordered with orange, and internally with pale yellow. The Green parrot (*Chrysotis astivus*), on the contrary, has its forehead and cheek stripes of a sky blue colour. The shoulders are green, and the red side-feathers of the tail edged with green.

From the observations made by the Prince von Wied, Speke, Schomburghk, and Burmeister, we learn that both kinds are widely spread over South America.

The Amazon parrot avoids the forests near the coast, but frequents the woods and bushes of the higher lands, while the Green parrot prefers the primitive forests. Both kinds are much alike in their habits and mode of life. Early in the morning they leave their roosting-places, and fly screaming through the air, beating violently with their wings, until they reach the woods or plantations where they can find fruit ; at noon they rest, after which they set out in search of food ; and in the evening, except in breeding time, assemble in great numbers, making a terrible noise until a roosting-place is found for the night.

The Prince von Wied gives the following account of the Green parrot, which is called the Kuriche by the Brazilians :—" In all the eastern coasts of Brazil that I travelled through this bird was very common ; I found it in numbers wherever there were thick forests, and on the borders of mango swamps at the mouths of rivers ; it breeds equally well in all such places, but seems to prefer localities where it can obtain the fruit of the mango. Great flocks inhabit the wooded country around Rio de Janeiro, Parahiba, Espirito Santo, and Belmonte, and their loud voices may be heard morning and evening in the bushes of the bog-like country, which is watered by the floods from the rivers. These bushes stand in the same relation to the Brazilian rivers as willows do to European streams ; but the trees are higher, and the parrots can often make their homes on their strong stems or branches. In the breeding season they usually fly up into the air in pairs, calling and screaming loudly, but except at that time are met with in very numerous flocks. We ourselves have seen such enormous swarms of short-tailed parrots in the Mucuri forests and other places, that the whole woodland was filled with their extraordinary cry. On these occasions many different species seemed to be combined in one flock ; their united screams were deafening, and as one party drove another from the trees, excitement gave new vigour to their shrieks. Should they alight upon a lofty, thickly-

foliated tree, it is often very difficult to see them, as their green hue is a great protection, and their presence is only indicated by the fall of the shells and stones of the fruit they devour. Whilst eating they remain quiet, but if alarmed will utter loud cries. They are shot in great numbers, as they are excellent food, and the soup made from their flesh is much esteemed both in Brazil and Surinam. These parrots lay two white eggs in holes of trees, upon a bed of shreds of wood, chipped out in preparing the nest; they breed but once in the year, and that in the spring time of their native land.



THE AMAZON PARROT (*Chrysotis Amazonicus*).

The young, if taken from the nest, are soon tamed, and learn to speak distinctly; on this account they are frequently found in the Brazilian houses, and are brought in great numbers into the towns, and sold to sailors, who bring them to Europe; they do not learn to speak so readily as the grey parrot, but prove teachable, tolerably gentle, and amiable towards those that feed them.

Under the generic name of PIONUS, Wagner unites many small parrots, which we will call the BLUNT-TAILED PARROTS. Their bodies are compact, the tail very short, the wings on the contrary being slender, pointed, and so long that they reach at least as far as the middle of the tail;

the beak is compressed at the sides, and the upper mandible generally terminates in a long pointed hook. The legs are strong and powerful, the plumage usually harsh, and the feathers cordiform and particularly small. Those on the head and neck are thick and strikingly coloured. We are familiar with many varieties of these birds, most of them from South America, and with others from Africa, which have lately been placed in a different tribe.



THE MAITAKKA (*Pionus menstruus*).

THE MAITAKKA.

Of all the blunt-tailed parrots, none is brought to Europe in greater numbers than the Brazilian MAITAKKA (*Pionus menstruus*). This bird is of middle size, ten and a half inches long and twenty inches across; the tail is three inches long, and the wing six inches in length from the shoulder to the tip. The plumage on the head, neck, throat, and upper part of the breast, is ultramarine, through which the black ground colour is visible: the neck feathers are of a copperish green, edged with blue. The back, lower part of belly, breast, and wings are copper green, the feathers on the back being edged with a darker shade; those upon the breast are shaded with light blue. The upper wing-covers are of a yellowish olive green, the under covers the colour of verdigris; the quill-feathers are

green, bordered with black, the wing-feathers blood-red, yellow at the tip, and the shafts blue. The two middle tail-feathers are green, the tip and outer web are blue, and near the root of a light blood-red. The beak is horn grey at the tip and paler at the base, with a rose-coloured spot on both sides beneath the nostrils; the legs are of a greyish slate colour, the eye-rings bluish grey, and the eyes greyish brown. The female resembles the male, but is somewhat paler. In the young, grey is generally the prevailing hue; in old birds blue predominates.

According to the testimony of travellers, particularly the Prince von Wied, Schomburghk, and Burmeister, the Maitakka inhabits all the country near the coast in Brazil and Guiana, where these birds are met with in great numbers. They live in pairs in the dry season, and assemble in large flocks during the rainy part of the year, flying with loud cries from tree to tree, and settling upon those most heavily laden with fruit, to which they often do great damage, returning in the evening to their usual resting-places. Their movements depend upon the time when the different fruits are ripe, and to enjoy these they fly about the country in various directions, during the rainy season approaching nearer to the plantations on the coast and open country, but in the hotter part of the year keeping more immediately in the neighbourhood of the principal forests.

The flocks of these birds are very noisy; but when pairing they only utter their call-note, which is a shrill, harsh cry. They breed during the dry season, and their preparations for sitting do not differ from those of other parrots. The Maitakka is hunted zealously throughout the whole of Brazil, partly in order to drive it from the plantations, and partly for the sake of its flesh. It is often tamed, and though not so teachable as other parrots, soon becomes accustomed to captivity, and can be taught to utter disjointed words. Great numbers are brought to the coast, and eagerly purchased by sailors, for though very numerous in Europe, these birds always command a high price. With care they can endure confinement for many years.

THE CRESTED HAWK PARROT.

One of the American parrots which we include in this family reminds us of the cockatoos, and must be considered as the type of a peculiar tribe (*Deroptyus*). Linnæus, who was acquainted with it, gave it two distinct names, the one on account of its sparrow-hawk-like plumage (*Deroptyus accipitrinus*), the other, because of its frill of elongated feathers (*Deroptyus coronatus*). We will call it the CRESTED HAWK-PARROT, seeing that the long feathers on the nape of the neck, which can be raised at pleasure, distinguish it from other South American species.

The beak is large, strongly but bluntly toothed, and having the ridge of the upper mandible powerfully hooked and projecting. The cere is short, and its margin curved like the letter S. The eyes are surrounded by a broad bare circle; the bluntly-pointed wings reach to the middle of the tail, the latter being of tolerable length and formed of rounded feathers, of which the three exterior on both sides are shortly graduated; the legs are weak, and the toes long. The plumage is on the whole extremely rich, of a pale yellowish-grey upon the head; the exterior margin of the forehead is of a brown colour; the crest is composed of dull blood-red feathers, edged with sky blue. The plumage on the back is light green, somewhat darker in the middle than on the sides, and the feathers on the lower part of the body are, as far as they are visible, blood-red. The sides of the cheeks and the throat are of a brownish tint; the primaries quite black, and the secondaries similarly coloured on both sides. The tail is bluish on its upper surface, and black underneath. Burmeister gives the length of this rare and beautiful species as being fourteen inches, five and a half of which belong to the tail; the wing measures seven inches from the shoulder to the tip.

As far as we know at present, this bird prefers dwelling in the wooded district near Guiana and the River Amazon. Spix found it at Villa Nova, on the river above-mentioned. Schomburghk mentions it but twice. He says that he met with it on the Rupununi, and also in the huts of the Warrau Indians; but though he saw numerous flocks of these magnificent birds enlivening the palm-trees of Sawari, and greeting passers-by with piercing cries, and thus had abundant opportunities for making observations, he tells us extremely little about them. "When angry," he informs us, "this bird is without doubt one of the most beautiful of the parrot race, as it then raises the brilliantly tinted feathers on the back of the neck, until they stand up perpendicularly, thus forming a flowing circle round the head." The settlers call it "Hia," which word is supposed to resemble its cry. From the same writer we learn that this species inhabits the lower woods, approaching the settlements with confidence, and although easily tamed, is weakly and unteachable. It makes its nest in the holes of trees, and lays from two to four eggs.

THE DWARF PARROTS.

AMONG the most vivacious and docile members of this family, the Dwarf Parrots (*Psittacula*) deserve our particular notice, for their behaviour is quite in harmony with their beautiful exterior. "The poets," says Schomburghk, "could not have been aware of the tender love that exists between a little pair of Dwarf Parrots, or they would never have selected doves as their models of ideal tenderness; indeed, it is impossible to compare the latter with the former in this respect. Between these "Love birds," as we generally call them, there exists the most perfect harmony in all their acts and wishes. They eat together, share the same bath, and if the male bird utters his cry his mate will instantly join her voice to his. Should one fall ill, the other feeds it, and, however many may be assembled on a tree, the little couples never leave each other. It is well known that these elegant little creatures can only be reared in pairs, or, at any rate, they must be allowed the society of some of their race. If taken young out of the nest, before they have chosen a mate, it may happen that solitary individuals can be reared; but the older birds never survive the death of their little companions, and soon pine themselves to death. More need not be said in favour of these 'inseparable birds.'"

The "Dwarf Parrots" are not larger than Finches or Larks, and are distinguished by their short, bluntly-hooked beaks, and strikingly short small tails, the feathers of which are tolerably equal in size and pointed. The quills of their wings are short, and when the latter are closed reach to the end of the tail; their legs are likewise short and feeble. The plumage is soft, long, and large-feathered; the individual feathers are, usually, not bright, but strikingly coloured and marked. We are acquainted with many species, which are spread over Africa, Asia, and South America, and resemble each other in their habits and mode of life. All are true parrots, climbing the branches with the greatest dexterity, flying rapidly, and feeding upon fruit and corn; the nests are made in the holes of trees, and their eggs are small, rounded, and white.

SWINDER'S LOVE-BIRD.

SWINDER'S LOVE-BIRD (*Agapornis Swinderiana*), one of the prettiest members of this group, is a tiny creature, at most five inches in length, of which more than one inch belongs to the tail: it is about nine inches broad, and each wing measures three inches from the shoulder to the tip. The prevailing colour of the plumage is green; the under part of the body, wings, and upper tail-covers are a beautiful azure blue; the short, scarcely rounded tail is, with the exception of the two middle

feathers, green, but bright red at the root and towards the end, with a black line dividing the two colours. The face, belly, and tail-covers are yellowish green, and the upper part of the throat is surrounded by a black band. These beautiful birds inhabit the western and interior parts of Africa, but information as to their habits in their native land is entirely wanting.



THE CRESTED HAWK PARROT (*Deroptyus accipitrinus coronatus*).

THE SPARROW PARROT.

The SPARROW PARROT (*Psittacula passerina*) is one of the smallest of the Brazilian parrots, being scarcely or not at all larger than the species we have just described. The colour of the plumage is a bright green, shaded into yellow upon the brow, face, and lower parts. The under-side of the tail and tail-covers are of a pale bright bluish green; the anterior border of the wing, the large wing-covers, the back, and secondary quill-feathers, as well as the inner wing-covers and the under part of the body, are of a bright ultramarine; the primary quills are blackish brown, with a green anterior edge. The beak is a bluish ashy green; the cere somewhat darker; the feet ash grey, with green, scale-like plates; the eyes brown.

The Sparrow Parrot is very common in Brazil, and inhabits both the woodlands near the sea-

coast and the bushes in dry districts, to which it is an admirable ornament. These birds come in troops into the gardens of the settlers like our sparrows, which they also resemble in the fact that when in company with others of their kind they scream and chatter in a very confused manner, the united flock producing a shrill twittering sound. They settle in great numbers upon a tree or shrub to nibble the fruit, during which time the whole swarm is in unceasing confusion, climbing nimbly up and down the branches, and whistling briskly. In other respects the Sparrow Parrot lives after the same manner as the rest of its relatives, making the same kind of nest, sometimes using the deserted oven-shaped abode of the Crested Parrot, and laying from three to four white eggs upon the shreds of wood that cover the bottom of the hole. Both young and old are often captured by the Brazilians, and seem soon to forget the loss of their freedom, if they are not separated from their mates. They are but short lived, and for that reason seldom reach Europe; still, it occasionally happens that, with great care, they will survive some years, and even breed in a state of captivity.

THE SISKIN PARROT.

The SISKIN PARROT (*Nasiterna pygmæa*), the dwarf among the dwarfs belonging to this order, lives in New Guinea and the Papuan Islands. Its green plumage is varied by a yellowish shade on the head, and the face is light golden brown; the middle tail-feathers are blue, the rest are black, with yellow tips; the beak is extraordinarily high and strong. As far as we know, this bird is not rare upon the high trees on the coast of New Guinea and in the forests of Salawatis and Misool, but no observer has as yet given us particulars of its habits.

COCKATOOS.

AMONGST the different species of parrots with which Australia is enriched the COCKATOOS (*Ptyctolophus*) take high rank. The members of this group are distinguished by their compact body, short tail, and wings of middle size; their large, short, broad beak toothed at the margin, the upper mandible of which terminates in a strong hook. The tongue is usually fleshy and smooth, the region of the eye bare, and the head decked with an upright tuft of bright and beautiful feathers. The plumage is generally very striking, either by reason of its pure white or delicate rose colour, or (for a parrot) the unusually dark tints that predominate. Cockatoos are found not only in Australia, but in the Moluccas, New Guinea, and the Philippine Islands, where most kinds establish themselves in enormous flocks in the woods, and fly from thence over the fields and plains, presenting an appearance that is enchantingly beautiful. "Perched under the shadow of the dark foliage," says Mitchell, "their bright wings and glowing crests transform the heights upon which they live into regions of the most exquisite beauty." In their habits and mode of life Cockatoos resemble other parrots, and must be reckoned among the most pleasing of the whole race. It is quite true that when living together in large flocks their cries frequently become a deafening noise intolerable to ordinary ears, but a solitary bird is very engaging; indeed, there is something so extremely tender in the tone in which it utters the word "cockatoo" (whence is derived the name), that it attracts us involuntarily, for the cry of "cockatoo" is always intended to express a kindly feeling, and changes when angry into a most fearful shriek. The Cockatoo soon learns to make friends with mankind, plays fewer tricks than other parrots, appears grateful for any kindness that is shown to it, and seems eager to make a fitting return; unkindness alone makes it ill-tempered or mischievous, and its excellent memory enables it to avenge an injury after the lapse of years. Its disposition in general is mild and gentle, and its good qualities numerous. It learns to speak with tolerable ease and fluency, forming the words into phrases, as though it understood them, and applies

whole sentences at a fitting opportunity. In their wild state, Cockatoos assemble in large flocks, which remain more or less united even during the breeding season ; they pass the night buried in the leafy shelter of the trees, and at break of day make the woods resound with their noisy screams as they rise into the air with light strokes of the wing, hovering and gliding till they reach a field yielding suitable food. Fruit, corn, and seeds constitute their principal nourishment, and they will also devour buds and bulbs, obtaining the latter very dextrously by the help of their long beaks. Every fresh occurrence in their daily life is greeted with loud cries ; and should a second flock pass over the place where they have settled, their combined shrieks are perfectly appalling, and can only be imagined by those who have heard the yells a few captive cockatoos are capable of producing. As soon as hunger is appeased these flocks retire to rest beneath the shelter of the branches, where they remain some hours in comparative quiet ; they then again go in search of a meal, returning to pass the night on their accustomed trees. Thus they live till the breeding season, when they pair, and each couple sets out to find a suitable home, preferring holes in trees, but also resorting to fissures in the rocks. Certain precipices near the South Australian rivers are yearly visited by thousands of Cockatoos, just as the cliffs of the north seas are infested by huge flocks of sea-gulls. We are told that some of these rocks are completely honeycombed by them, and the strength and firmness of their beaks renders this assertion easily credible. They lay two white, pointed eggs, about the size of those of a bantam fowl ; but in what manner incubation is carried on we are not aware. We are told by travellers that they soon become timid if they suspect danger, and, like other kinds of parrots, carry on their depredations with so much cunning that it is very difficult, or indeed impossible, to drive them from the fields. The natives hunt them in a very peculiar manner. "Perhaps," says Captain Grey, "it would be impossible to imagine a more exciting spectacle than that of seeing the Australians hunt the Cockatoo. They employ for this purpose a very remarkable weapon called a boomerang ; this is a sickle-shaped flat instrument made of wood, which can be thrown by the hand to a distance of 100 feet, and flies in small circles with many windings from the direct path. An Australian will follow a flock either into the fields or woods, preferring, however, places where large trees are situated near water, such spots as these being the favourite resort of the Cockatoos. Here they are to be found in innumerable hosts, climbing on the branches or flying from tree to tree ; here they also sleep, and here the wily native comes, most watchfully observing all necessary precautions. He goes from one tree to another, and creeps from bush to bush, taking the greatest care not to disturb the wary birds, but in vain, for, however quiet his movements may be, he is soon discovered, and his near approach greeted with a hideous cry. The birds have already perceived that danger is at hand, though they do not know what the next step may be. At length their pursuer reaches the water, and discloses his dark form to their view ; amidst piercing shrieks the white cloud of birds rises into the air, and at the same instant the Australian throws his weapon amongst them. The boomerang, which is thrown with great force, dances and springs in the most wonderful manner over the water, and then, rising higher and higher in its wayward flight, is soon careering in the midst of the frightened multitude. A second, a third, and a fourth weapon is discharged ; in vain the terrified creatures try to escape, the apparently aimless course of the missile bewilders them and delays their flight. One after the other is struck by the boomerang, and comes to the ground, having probably either lost its head or broken its wing ; they fall screaming with pain and terror, and it is only when the dusky hunter has attained his end that the remainder of the terrified flock hide themselves in the foliage of the trees." The flesh of the Cockatoo is tolerably good, and the soup made from it excellent. The number of these birds that find a home with us prove that they are easily captured, and, like all other parrots, they will live a long time if nourished with simple food.

THE LEMON-CRESTED COCKATOO.

The LEMON-CRESTED COCKATOO (*Cacatua galerita*) is known by its white colour (which in some specimens presents the appearance of having had a delicate red breathed upon it), and by its perfectly shaped tuft, formed of two rows of long and slender feathers, that can be raised or lowered at pleasure. This long tuft or crest, the wings, and the inner web of the tail-feathers are of a pale brimstone colour at the root. The eye is deep brown, the beak black, and the foot greyish brown. The length of this species is about one foot four inches.

We are at present uncertain whether this bird is spread over Van Diemen's Land, as well as over the whole of Australia and New Holland, or whether those countries are inhabited by different species of very similar plumage. A careful examination of the Cockatoos most abounding in those three regions has shown a decided difference in the construction of the beak, and justifies the last-mentioned opinion. According to Gould, the Lemon-crested Cockatoo is common to all the Australian settlements except those to the west. These birds live in flocks of hundreds and thousands, much preferring open plains, or slightly wooded districts, to the forests near the coast.

LEADBEATER'S COCKATOO.

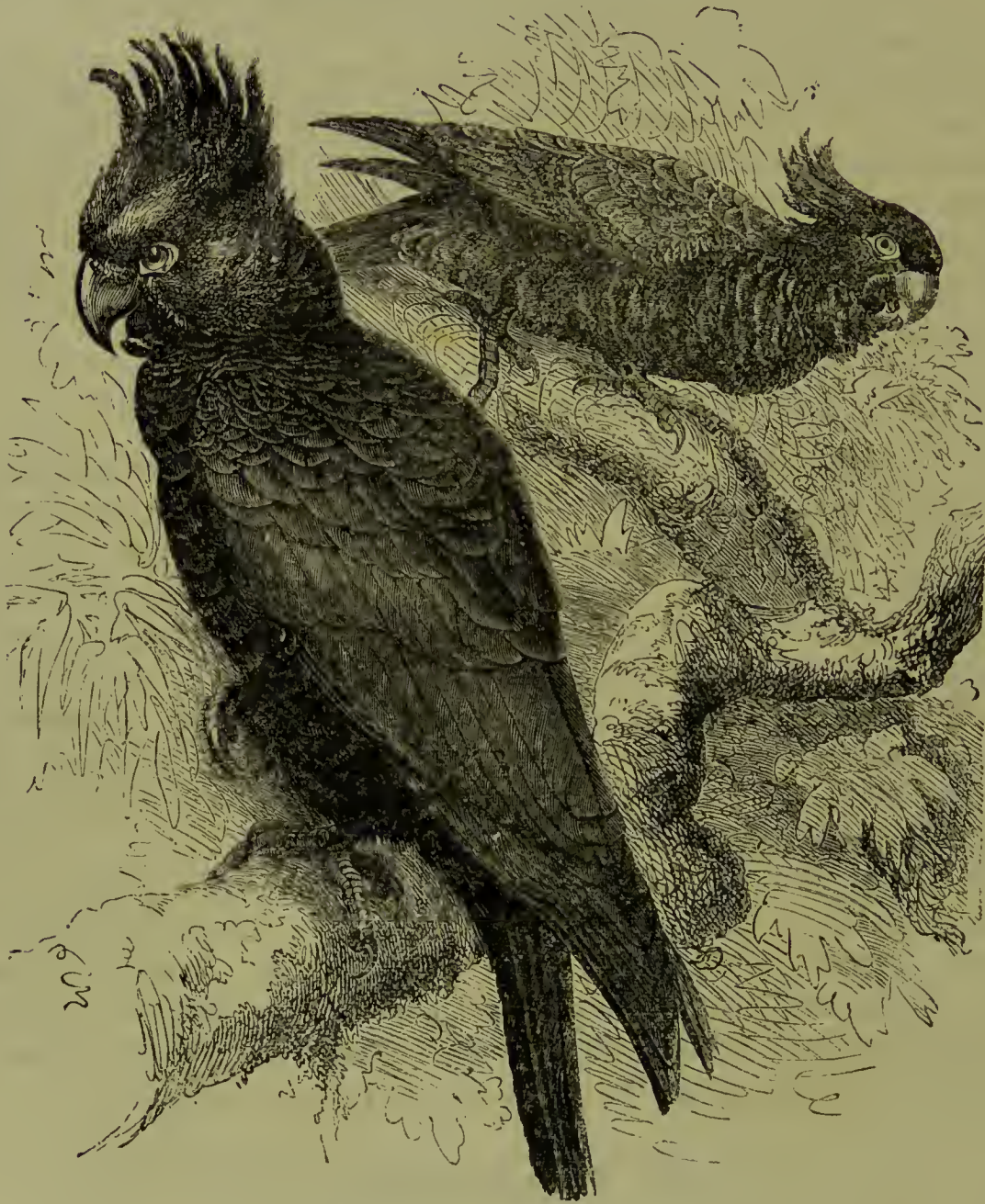
The INCA, or LEADBEATER'S COCKATOO (*Cacatua Leadbeateri*), another species found on the continent of Australia, differs from the bird we have just described in the arrangement of its colours. Its plumage is white, but the forehead, sides of the neck, the middle and under surface of the wings, are of a beautiful rose tint. The crest is magnificent; the individual feathers of which it is composed are bright red at the root, spotted with yellow in the middle, and tipped with white. When this plume is laid back, nothing but the white tips can be seen, but it is no sooner raised than the blazing red appears, and the yellow spots unite themselves into a stripe that renders its appearance still more striking. The spaces around the eyes are light brown; the beak light horn colour; the foot dark brown. The female is somewhat paler on the lower part of the body, and has large yellow spots upon the crest.

Gould tells us that these splendid birds are spread over the whole of South Australia, living principally upon the high gum-trees and brushwood near the rivers of the interior. They are found principally near the Darling and Murray rivers, and do not extend as far as the north-western coast. During the breeding season they appear in great numbers in certain localities, and animate the otherwise monotonous forests of the interior. The voice of the Inca cockatoo is more plaintive than that of its congeners, and its scream not so harsh.

THE HELMET COCKATOO.

The HELMET COCKATOO (*Callicephalus galeatus*) also deserves notice as being the type of a tribe that forms the connecting link between the True Cockatoos and the GERINGEROES or RAVEN COCKATOOS of New Holland. This bird is known by its short vaulted beak, which has a slightly projecting hook on the upper mandible, and by its tolerably strong and rounded tail. The plumage is beautiful and richly marked; the upper part of the body is a dark slate blue, the forehead, checks, and crest scarlet; all the feathers, except the primary and secondary quills and the tail-feathers, are slender, and edged with whitish grey more deeply on the upper than on the under part of the body. The female is darker, and almost of a slate colour, the upper surface of the neck and back sprinkled with pale grey, and the rest of the body marked with irregular greyish white stripes. The feathers on the under parts of the body are

of a brimstone colour, edged with dusky red. The spaces round the eyes are blackish brown, the beak light horn colour, the feet black and sprinkled with a greyish kind of dust. We have no knowledge whatever of these birds in their native state. Gould tells us that they are found in the woods on the southern coast of Australia, and on some of the neighbouring islands, as also in the northern parts of Van Diemen's Land, where they inhabit the highest trees, and luxuriate upon the seeds of the different kinds of Eucalyptus.



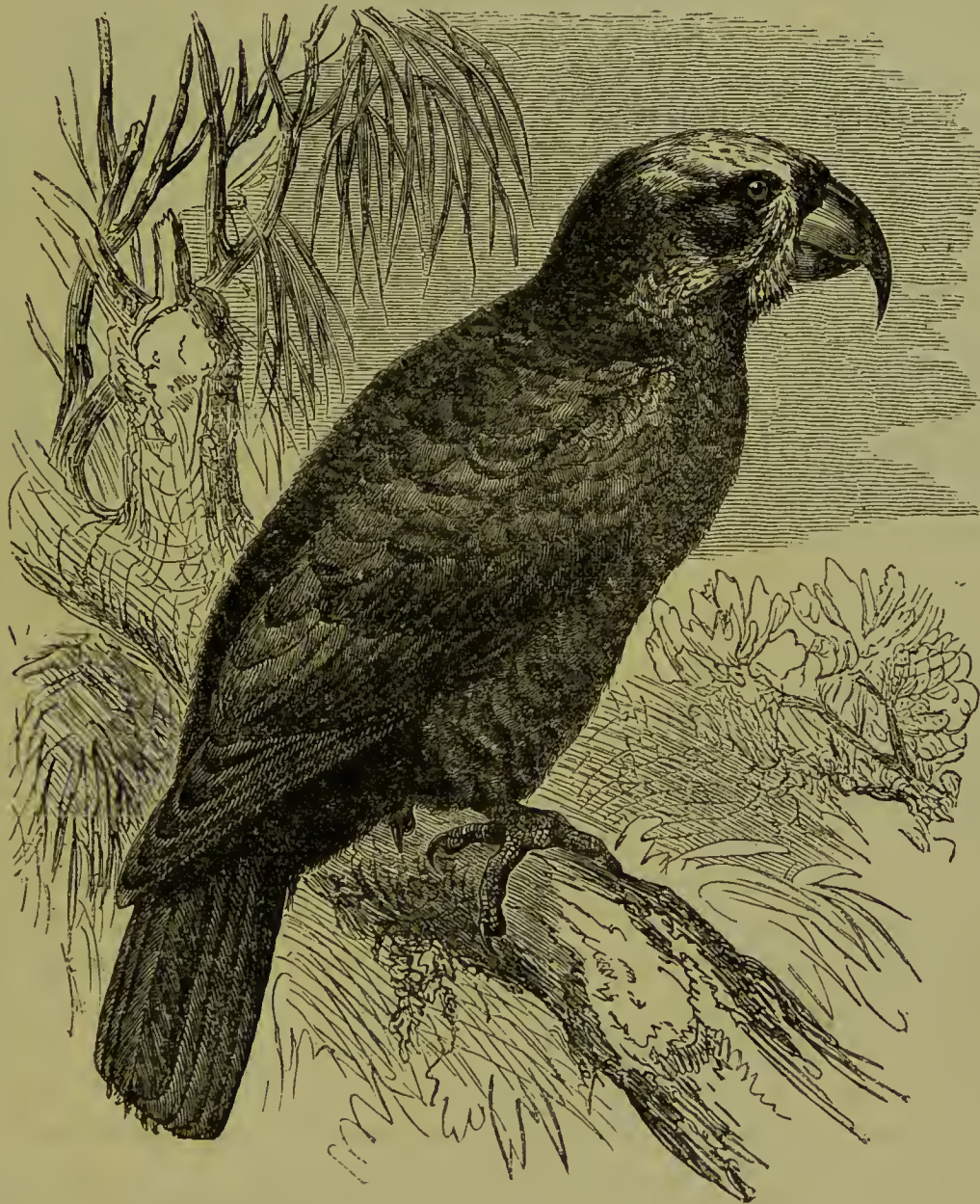
THE HELMET COCKATOO (*Callicephalus galeatus*).

Many species of Cockatoos are remarkable for the peculiar formation of their beaks, the upper part of which is unusually prolonged. These birds form a distinct group, but much resemble the true Cockatoos, and have therefore been placed among them. Such, for example, is

THE NOSE COCKATOO.

The NOSE COCKATOO (*Licmetis nasicus*) is from sixteen to seventeen inches in length; the beak measures along the ridge about two inches. Both sexes are of the same colour, the whole plumage being white, the under-wing and tail-covers mottled with pale brimstone yellow. All the feathers on

the head and neck as far as the upper part of the breast, are vermilion red, white at the tip; a vermilion stripe runs across the forehead, reaching to the back, and passes like a pair of eyebrows over the eyes. There is also a crooked line of red upon the breast. The beak is light horn colour, the feet ash grey. Some of the feathers near the cheeks can be raised at will. Gould considers that there are two species of this bird, one of which is found in Western Australia or New South Wales, the other is confined to Port Philip and Southern Australia.



THE NESTOR COCKATOO (*Nestor productus*).

The Nose Cockatoos seem rather to inhabit the interior than the neighbourhood of the sea-coast. They assemble in large flocks, and spend the night and noonday upon the summits of the forest trees; passing, however, a considerable portion of their time on the ground, where they run, or rather hop, somewhat slowly; their flight, on the contrary, is very rapid, and much lighter than that of their congeners. Their food consists of corn and seeds, but principally of buds and the bulbs of different plants, more especially of orchids, which they obtain by the help of their long and curiously shaped beak. The breeding of these birds offers nothing unusual; their two

white eggs, which resemble those of the Tufted Cockatoos, are generally laid on a bed of decayed wood upon the ground, or in some hole in a large gum-tree. This species can endure captivity for many years, and has lately been brought to Europe in great numbers, but, notwithstanding this, it is not often met with in our collections. Gould has observed that a caged Nose Cockatoo is much more sullen, gloomy, and irritable than others of its race, and this we can fully confirm, having had for a year one of these birds in our possession, that has never become reconciled to its keeper, but threatens with its beak all who approach; it cannot endure to be stroked or touched, and everything unusual excites its rage; at such times it erects the small horseshoe-shaped crest upon its brow, so that the splendid red feathers are displayed, wags its head violently, repeatedly snaps its beak, and screams most furiously. The word "cockatoo" is mingled with its cries, but uttered in quite another tone to that employed by its congeners; the latter generally utter it in a soft drawling manner, whilst the Nose Cockatoo on the contrary pronounces the two first syllables hurriedly, and lays a strong emphasis on the last. The facility with which this parrot can move its beak in any direction is very remarkable, and no other species that we are acquainted with has such suppleness and command of the joints of its jaws. The beak of the Nose Cockatoo is, indeed, the most extraordinary pair of pincers that ever was constructed. In justice to this bird, we must add to the foregoing remarks that it may occasionally be made very tame, and not only learns to speak, but is able to apply its language very intelligently. There is one in the Zoological Gardens at Antwerp that is an universal favourite with the visitors, with whom it converses freely, greeting its acquaintances as soon as they appear, without the slightest ill-humour or sullenness.

THE NESTOR COCKATOO.

The NESTOR COCKATOO (*Nestor productus*) represents a very remarkable tribe of parrots, recognisable by their extraordinarily elongated beak and sickle-shaped upper mandible, which projects far beyond the lower. The tail is of middle size, the points of the tail-feathers being in some places denuded of their web, and the wings, when closed, reach nearly to the middle of the tail. The tarsus is decidedly higher, and the plumage harsher and more imbricated than in other Cockatoos. In our specimen it is much variegated, the upper part of the body is brown, the head and back of the neck mottled with grey, each of the feathers covering these parts being bordered with a darker shade. The under part of the body and tail-covers are of a deep red; the breast, throat, and cheeks, are yellow, the latter having a reddish tint; the tail-feathers are orange at the root, and striped with brown: the inner web of the quills is dark red and brown; the bare place round the eyes, the legs, and the cere, are of an olive brown; the beak is brown; and the eye a very dark brown. Both sexes are similarly coloured, but the young are of a dark olive brown on the breast, instead of being adorned with the red and gold that decks their parents.

The Nestor Cockatoos are not only striking in their appearance, but lead a somewhat remarkable life; they are confined to a very limited district, only inhabiting New Zealand and the neighbouring islands. The bird we have just described is only found on Philip's Island, the circumference of which does not exceed five miles; and Gould informs us that people living for many years on Norfolk Island, at about four or five miles distance, have never seen it. The extremely limited extent of the habitat of this species is very unpromising as regards its preservation, and it will doubtless soon share the fate of the DRONTE; since the cultivation of the island, it has been periodically hunted, and its days are numbered; probably it is already extinct, as we have seen nothing of it for several years. The rocky parts of the island, partially covered with trees, form, or rather *did* form, its favourite resort; here it passes its time, principally upon the ground, seeking for roots, which it digs

up with its beak, at least, so we imagine, as the bill is often found covered with earth, and, indeed, we can well believe that so remarkable an instrument may be employed for this purpose. According to some naturalists it sucks nectar, although its tongue does not, like that of the Lory, end in a tuft, but has only a nail-like horny plate at the tip, closely resembling the nail upon a human finger. The hard nuts that other parrots enjoy are avoided by the Nestor, whose beak is not strong enough to break the shell. Gould saw one of these birds in the possession of Major Andrews, in Sydney; it was a cheerful, lively companion, and seemed fully inclined to attract the attention of strangers. Its habits differed considerably from those of other parrots, and its owner did not keep it in a cage, but allowed it to fly about the entrance-hall. We are told of another tame Nestor that it had a great fondness for green food, and would pick the leaves of lettuce and other juicy plants. The voice of this bird has a harsh, quavering, snarling sound, much reminding us of the barking of a dog. As regards its propagation, we only know that it is said to lay four eggs in some hole in a tree.

THE EAGLE COCKATOO.

The EAGLE COCKATOO (*Dasyptilus Pequetii*) belongs to the same division as the last-named species, and is remarkable for its shape and plumage, reminding us, in some respects, of the birds of prey. Nothing positive can be said as to its native land; Gould tells us that it lives on the island of Formosa, where no other parrots are known, but it would rather appear to be an inhabitant of New Guinea or Salawatti; indeed, Rosenberg speaks decidedly as to the first-named island being its home. The Eagle Cockatoo is about twenty inches long, ten of which are included in the tail; the wings are ten and a half inches in length. This species is recognised by its beak, the upper portion of which does not rise so high above the lower mandible as in the Nestor; and by the plumage of the head, consisting of a few stiff bristles and slender upright feathers, with very stiff hard shafts. The cheeks and cheek-stripes appear almost bare, the wings and tail are shaped like those of the last-mentioned bird, though the tail is somewhat longer and more rounded. The plumage is of a brilliant black, shading into grey on the throat, head, and breast, the feathers on these parts being sprinkled with pale brown. The wing-covers along the carpus, the first wing-covers of the secondary quills, the under wing-covers, the five first feathers of the secondary quills on their outer web, the feathers of the axilla, belly, and rump, are of a beautiful scarlet, which is somewhat darker on the under tail-covers; the upper tail-covers are edged with dark red, the beak is black, and the feet dark brown. Notwithstanding the extreme rarity of this creature, we have been able to take our description from a living bird which was for some time in the Earl of Derby's celebrated collection.

In New Guinea and the neighbouring islands, viz., Salawatti, Misool, and Waigui, we find several kinds of parrots that are included among the Cockatoos, although their resemblance to these birds is merely superficial. These are the LONG-BILLED PARROTS (*Microglossus*) of Le Vaillant—very large birds of a dark colour. Their resemblance to the Cockatoos consists principally in their short square tail, and the plume upon the head, although the latter is of quite a different shape to that of the true Cockatoo. Their naked cheeks, and enormous upper mandible, remind us of the Araras. The shape of the tongue is quite peculiar; this organ is of medium length, fleshy, but no broader than it is thick, the upper surface is hollow and flattened at the tip; this strangely-shaped tongue can be protruded, and employed as a spoon to convey food into the mouth, the edges being very flexible, and capable of being bent towards each other. The other distinguishing characteristics of the Long-billed Parrots are the naked tarsi (which are bare as far as the heel-joints) and the short flat soles of the feet.

THE CASMALOS.

The CASMALOS (*Microglossus aterrimus*), the best known of these species, is an inhabitant of New Guinea, and is one of the largest of the parrot tribe, even exceeding most of the Araras in this respect. Its plumage is uniformly deep black, with somewhat of a greenish gloss; the living bird has a greyish appearance, owing to a white meal-like dust, which, as in most other parrots, is scattered



THE CASMALOS (*Microglossus aterrimus*).

over its plumage; the naked wrinkled cheeks are of a red colour. The crest is formed by a number of long slender isolated feathers, and is of a lighter grey than the rest of the plumage.

Little is known of these birds in their natural state. "The Large-beaked Parrot," says von Rosenberg, "is not rare in the islands of Waigui, Misool, and Salawatti, and is found on the coast of New Guinea. It usually perches at the very top of the highest trees, keeping its body constantly in motion, and whilst resting, or when by powerful strokes of its wings it raises itself into the air, it utters a trumpet-like note quite different from that produced by the White Cockatoo. The natives

take the young birds from the nest, and, when they have reared them, sell them to traders. In captivity they seem to prefer the fruit of the canary tree, the hard shell of which they manage to crack with the utmost facility. One of these so-called Cockatoos, belonging to a resident in Amboyna, was in the habit of flying about all over the town, but always returned home at the proper time to take its meals and to sleep." Von Marten saw a tame parrot of this kind at Mahai. "The



THE RAVEN COCKATOO (*Calyptorhynchus Banksii*).

Black Cockatoo," he observes, "when perched stiffly with its tail erect, red face, and powerful beak, has the air of an old general, and, owing to its extreme ugliness, makes a forcible impression on all who see it. It is quiet and slow in its movements, but allows strangers to approach, and utters from time to time a disagreeable, harsh, guttural shriek."

According to Rosenberg, the Large-beaked Parrot is often seen at Amboyna, where it may be bought for about twenty or twenty-five shillings: in Europe these remarkable birds are amongst the greatest curiosities in our collections. Unlike all other parrots with which we are acquainted, the Casmalos uses its peculiarly-formed tongue in a strange manner; taking its food with its foot, it carries the morsel to its beak, tears it up, and presses the end of the tongue, which is provided with a

round horn-like plate, upon the pieces, which stick to it; the tongue is then drawn in, and the food swallowed; this being a very slow process, the meal usually occupies a considerable time.

The RAVEN COCKATOOS (*Calyptorhynchus*) differ very materially from all other species not only in the colour of the feathers, but in their form. The beak is short, crescent-shaped, and sloping, owing to the great breadth of the lower jaw; the wings are large and broad, reaching only over the first third of the long, strong, and rounded tail; the crest is comparatively small.

The Raven Cockatoos, or Geringeroes, are found exclusively in New Holland, and there only in certain districts. Gould, the great explorer of Australian ornithology, mentions six species in his masterly work, and gives a tolerably full account of their mode of life; there is, however, great similarity between them, and the following observations may be considered as applicable to all.

The Raven Cockatoos are truly *tree*-birds, feeding principally upon the seeds of the Eucalypti, and other trees indigenous to the country, but, unlike other parrots, they will occasionally eat large caterpillars. Another peculiarity is that they only congregate in small parties consisting of not more than from four to eight individuals, and never assemble in considerable flocks. Each part of Van Dieman's Land has its peculiar species.

The manner in which the Raven Cockatoos feed is also very peculiar. Some species break off the little twigs of the fruit trees while eating, apparently out of mischief; and all use their sharp beaks to draw the concealed living insects—principally larvæ—out of the wood. The large caterpillars which they obtain from the gum-trees do not always satisfy their hunger; they wage war upon the grubs that lurk deep in the wood, dextrously stripping off the bark and picking large holes in the branches until they reach their prey. Some species prefer insects to any other kind of nourishment, whilst others subsist upon seeds, principally those of the Casuarinæ and Banksias. Fruit they seem to despise, although they destroy much out of pure mischief, plucking it before it is ripe, to the great annoyance of the owners.

So far as we know, the Geringeroes breed exclusively in the holes of trees, always choosing the highest and most unapproachable trunks, and invariably such as the natives cannot climb. They prepare no regular nest in the holes which they select, or at most only collect chips of wood from the ground, wherewith to line the interior. They lay from two to five tolerably large eggs, $1\frac{3}{8}$ inch in length and $1\frac{1}{4}$ inch broad. Besides the attacks made upon them by man, the Raven Cockatoos often become victims to birds and beasts of prey. Europeans do not prize their flesh very highly, but by the natives it is esteemed a delicacy.

BANKS' RAVEN COCKATOO.

BANKS' RAVEN COCKATOO (*Calyptorhynchus Banksii*) attains the length of a foot and a half. The plumage of the male is black, the only exception being the tail, which is a brilliant black with a greenish sheen. The female is greenish-black upon the head, spotted with yellow on the neck and wings, and striped with light yellow upon the breast. The male has a broad scarlet band extending along the middle of the tail, but not reaching the two middle feathers or the outer edge of the side feathers. The female has broad yellow and reddish-yellow spotted stripes similarly disposed, both upon the outer and the under side of the tail-covers.

Banks' Raven Cockatoo belongs to New South Wales, and is principally found in the district between Moreton Bay and Port Philip, though by no means rare in the immediate neighbourhood of Sydney and other large towns. Its flight is heavy; the wings are lax, and seem to move with difficulty; it seldom rises high in the air, but will, nevertheless, sometimes fly for a mile at a stretch; whilst on the wing it utters a loud cry, which is less shrill than the harsh screech of the cockatoo. When on the ground, these birds move with difficulty; upon the tops of trees their motions are

less deliberate, but always slow. Most of them are shy and distrustful, owing no doubt to the manifold persecutions from which they suffer, and it is only during feeding-time that they are less upon the watch. They are much attached to their companions, and should one of them be killed or wounded, the hapless individual is seldom deserted by the others, who generally fly about him, uttering a wailing cry, and expose themselves so recklessly to the hunter, that he, knowing how to avail himself of this habit, often succeeds in capturing the whole flock.

THE KAKAPO, OR NIGHT-PARROT OF NEW ZEALAND.

For the same reason that the Owls and the Falcons are grouped as distinct families, we shall consider the KAKAPO, OR NIGHT-PARROT OF NEW ZEALAND (*Strigops habroptilus*) as the type of a peculiar race. This bird, indeed, reminds us so forcibly of the Owls, that were it not for the structure of the foot, we should decidedly class it as one of them. Its scientific name of "owl-faced" (*Strigops*) is very well chosen. The large body of this species is covered with soft, delicate feathers, which form a rudimentary veil about the face; the wings are short and trough-shaped; the tail long and rounded; the beak long, bent like that of an owl, and nearly covered with stiff, bristle-like feathers; the feet are of middle size, the toes long. The general colour is a dark green, interspersed with tolerably regular stripes, and some irregular yellow spots; upon the breast the colour is lighter and yellower than on the back, and the stripes are indistinct; the green tail is banded with dark brown. The habitat of the Kakapo is restricted to New Zealand, and the species is now found in tolerable abundance only in the most remote Alpine valleys of the southern island. It has been nearly exterminated in the northern portion. Lyall and Haast have given us full particulars of its habits. "The Kakapo," says the first of these writers, "is still found occasionally in the northern districts of New Zealand, frequenting the dry cliffs or the low grounds near the banks of the rivers, where the high trees and woods are, to some extent, free from ferns and brushwood. The first time we met with it was upon some hills, rising 4,000 feet above the level of the sea; but we afterwards found it living with others of the same species, on open spots near the mouth of the river, and not far from the coast." "Most striking," adds Haast, "is the fact that the Kakapo (except in the valley of the Makavora, formed by the Lake Wanaka) is never seen east of the mountains, although forests abound there; apparently the absence of woodland in the intervening district is an obstacle to its farther progress in that direction. These birds are less numerous in the Wilkin valley, where I have observed traces of the wild dog; in the valley of the Hunter, which is only separated from these districts by a chain of not very high mountains and some inconsiderable hills, no trace of them is to be found, although the fine beech forests offer them a favourable retreat." "In such places," says Lyall, "the tracks of the Kakapo were visible; these are about a foot wide, very regularly worn, and often resemble in so striking a manner those made by men, that at first we really believed that the natives must have been in the neighbourhood. The Kakapo lives in holes under the roots of trees, and in the cavities of overhanging rocks."

Lyall tells us that the holes he saw had two openings, and the trees above them were for some distance hollow. The Kakapo, he says, was not visible by day, except when driven from its retreat; and he was never able to find it but with the help of dogs. When these birds were more plentiful, the natives used to catch them at night by torch-light. There is a breed of half-wild dogs in the northern part of this island continually hunting the Kakapos, which, indeed, they have almost exterminated. It is said that the spread of these dogs is arrested by a river; but it is to be feared that so soon as they succeed in crossing that barrier, the total extinction of these birds will ensue; for although they use their beak and claws very energetically, and can make a powerful resistance, still, sooner or later, they must succumb to their four-footed enemy, and ultimately share the fate of the

MOA, the DRONTE, and other species recently become extinct. "The Maoris assure me," says Haast, "that the Kakapo is brave, and often confronts the dogs with success; but this cannot be credited if their dogs are worth anything, for mine never had any serious battle with it. At first, the dog was attacked both with beak and claws, but it soon learnt to conquer its game by biting it through the back." An idea was formerly entertained that the Kakapos were nocturnal in their habits, but our observations lead us to believe that this is not exactly the case. We generally heard their voices about an hour after sunset, in places which were rendered dark and obscured by thick foliage, and they then began to sweep about, attracted by the light. We, however, twice saw these birds during the day feeding upon the ground, and strictly upon their guard against approaching danger. On the first occasion, about noon on a cloudy day, we were returning through an open wood from the western coast, and saw the Kakapo sitting upon an uprooted tree, not far from the Haast river; as we approached, it quickly disappeared, but was caught by the dogs. The second time, on a clear day, as we entered a deep ravine, we saw one of these birds perched ten feet high upon a fuchsia-tree, the berries of which it was eating. As soon as it saw us, it fell, as though shot, to the earth, and disappeared beneath the surrounding blocks of stone. The most astonishing thing was, that the bird made no use of its wings; indeed, did not even open them to break its fall. In order to ascertain whether it would either fly or flutter, we followed, and having with us a Kakapo that had been taken uninjured by the dogs, we set it free upon a large, open, gravelly spot, where there was plenty of room to run away, if it wished to do so, or to raise itself into the air, even should it require a large space for that purpose. We were much surprised to find that it only ran to the nearest thicket, and that much faster than we could have thought possible from the structure of its toes and the bulk of its body. Its movements resembled those of a barn-door fowl. We stood on one side of it, and it appeared to us that it kept its wings quite close to the body; but one of our companions, who was behind it, observed that the wings were slightly raised, but motionless; so that doubtless they are employed more as a means of balancing the bird than to accelerate its progress. Though its shape is not suited to running, it can progress in this manner to a considerable distance, as we often saw by its tracks, which extended sometimes for more than a mile over sand and shingle down to the bank of the river. Lyall, however, has seen this bird flying, though only for trifling distances. "During our hunt," he says, "we only saw the Kakapo fly when, having climbed a hollow tree, it wished to reach another in the neighbourhood. From the first tree it flew down to the next in height, making its way up each in turn, climbing very quickly to the top by the help of its tail; the motion of the wings was very trifling—indeed, almost imperceptible.

"The cry of the Kakapo is a hoarse croak, which changes into a discordant screech when the bird is angry or hungry. The Maoris declare that the noise these creatures make is sometimes deafening during the winter, when they congregate in great numbers, and greet each other on their arrival or departure. The stomach of a specimen we killed contained a pale or almost white homogeneous mass, without any trace of flesh, so that, doubtless, its food consists partly of roots and partly of leaves and delicate shoots of plants. We observed that at one place where the birds were very numerous, a leguminous plant, growing on the banks of the river, had all its buds nipped off; and learnt from a boatman, who had lived in that place for many years engaged in the whale fisheries, that the Kakapo was the offender. We also found its beak covered with hardened dirt. This species, he told us, requires a great deal of river water in order to dilute the pulpy mass of vegetable matter in its crop. Except in two instances, in which berries had been eaten, we found the crop always filled with half-digested moss, and so distended and heavy that it weighed many ounces; the bird, moreover, appeared much smaller when the crop was emptied. The quantity of innu-

trititious food with which it stuffs itself explains its liking for living upon the ground, and compels it to resort to wild localities inhabited by no other parrots. Another peculiarity, also perhaps a consequence of this vegetable diet, is, that instead of the soft oily fat that other birds have under the skin, it has an abundance of solid white fat; its flesh is much whiter than that of other parrots, and has a very superior flavour. We must be forgiven for observing that it is a dainty article of food for those who are wandering in these wildernesses, and we can quite believe that the Maoris smack their lips whenever the Kakapo is mentioned."

On the subject of their propagation, Lyall makes the following statement:—"During the latter half of February and the first days of March, at which time we tarried among the dwelling-places of the Kakapos, I found young in many holes, often only one, and never more than two in each. In one instance I found a single nestling and an addled egg. Sometimes, not always, I found the parent in the hole. There is no real nest; the bird only scratches a shallow cavity in the dry mass of decayed wood. The egg is pure white, about the size of a pigeon's.

"Many young birds were brought to us on board ship, but most of them died in a few days, apparently in consequence of the unusual treatment; others lived for some months. Generally, after a few weeks, their legs were crippled by confinement, either on account of the smallness of their cage, or the want of proper food. We fed them principally with sopped bread and cooked potatoes; if we allowed them to run about in the garden, they ate the grass and cabbages, and snapped eagerly at every green leaf that came in their way. A Kakapo which we succeeded in bringing alive to within six hundred miles of the English coast, ate, while we resided in Sydney, the leaves of the Banksias and Eucalypti. It seemed to relish nuts and almonds, and during the latter part of our voyage home, lived almost entirely upon Brazil nuts. On several occasions this bird was seized with cramp for two or three days, and whilst this lasted it ate nothing, cried furiously, and hacked with its bill if any one ventured to disturb it. At such times it was not to be trusted, for it bit most fiercely, precisely when least expected. Its temper was always at the best when any one took it out of its cage. Early in the morning it would busy itself, as soon as out of confinement, with the first object that came in its way, generally with our trousers or boots. The latter it much fancied—it would squat upon them, beat its wings, and give every symptom of the greatest enjoyment; it would then rise, rub its sides against them, roll on them back downwards, and kick its feet in the most lively manner. An unlucky accident caused its death."

Another of these birds, which Captain Stoke brought ashore and transmitted to the care of Major Murray, was allowed to run about the garden freely. It showed a strong liking for the company of children, and would follow them about like a dog.

The LONG-TAILED PARROTS are rich in species, and present considerable variety in their dimensions, their size ranging from that of the largest Parrot to that of a Finch; but they all possess in common a graduated tail, at least as long as the body, the middle feathers of which are sometimes twice the length of those at the side. The wings, which are moderately pointed, seldom reach, when folded, beyond the first third of the tail. The beak is, as a rule, strong, almost always short, and very round, but sometimes, in solitary cases, it is long and but slightly bowed.

The plumage of the Long-tailed Parrots is very varied, still it never possesses the softness and gloss observable in the coat of the Lory. A tuft-like prolongation of the feathers is rarely but occasionally met with. It is, however, impossible to describe the plumage of this group in general terms; suffice it to say, that the hues we have mentioned as employed in the coloration of other parrots, also predominate in their feathers. The Long-tailed Parrots may be considered as the type of their order, inhabiting, as they do, all the various countries in which the race is found.

THE ARARAS.

AMONGST the Long-tailed Parrots, the ARARAS (*Aræ*) are easily distinguished by their unusually large beak, furnished with a smooth broad summit. The lower mandible is very short, and incised or obliquely cut, without any ridge upon the chin, and having its base entirely covered by a cere. The cheeks are broad and naked, but sometimes covered with small feathers arranged in rows; the tarsus is thick, strong, and short; the toes long, and furnished with large strongly bent claws; the wings are long and pointed, and reach far down the tail, which is longer than the body. The plumage is very thick.

The members of this very conspicuous group are almost exclusively confined to the eastern parts of South America, where they inhabit the primitive forests, far from man and the turmoil of the world. Unlike other parrots, they live in little companies, which very rarely unite to form a flock. They feed principally upon fruit, are comparatively quiet, and although they exhibit but little vivacity, are as intelligent as the rest of their race.

THE SCARLET MACAW (*Ara Macao*).

This species is about $2\frac{3}{4}$ feet long, of which more than 1 foot belongs to the tail; the stretch of its wings is about $3\frac{3}{4}$ feet. The plumage is magnificent and very brightly coloured. The head, neck, breast, and belly are scarlet; the feathers of the neck and upper part of the back have a greenish edge, which becomes broader lower down. The middle and lower regions of the back, the rump, and under tail-covers are a beautiful sky blue; the upper feathers of the wings are scarlet; the middle, hinder, under, and shoulder feathers green, the latter shaded with red; the front wing-covers are ultramarine on the outer web, and on the inner pale red. The same is the case with the inner wing-covers; the middle tail-feathers are more or less red, the inner web of the quills black. On the naked flesh-coloured cheeks, which look as though powdered with white flour, are five or six rows of little pencil-shaped red feathers, implanted near the nostrils, and ranged around the eyes; the beak is of a clear horn colour, black at the point and edge, as is the lower mandible; the eyes are yellowish white, the feet blackish grey, the claws brownish black. The two sexes are alike in colour, the young birds more delicately tinted than the old ones. In the variety of this bird represented in the frontispiece to Part I., the colours are somewhat different.

The principal portion of the plumage is bright scarlet, the quill-feathers of the wings fine blue, the greater wing-coverts yellow, tinged with green, the upper and under tail-coverts blue, the two middle feathers of the tail crimson, and the remainder of the tail-feathers, which gradually decrease in length towards the sides, are partly red and partly blue; the feet are dusky black, the naked skin of the cheeks wrinkled and white, the upper mandible whitish, and the lower one black or dusky.

The Macaw was formerly to be found in the immediate neighbourhood of such large cities as Rio de Janeiro, &c., but it has long since left the inhabited part of the country. Flat, well-watered, primitive forests appear to be its favourite haunts; it will not ascend mountains, but in high, parched districts, burnt up by the heat of the sun, or in the rocky, wild parts of Bahia, its cry is constantly to be heard. "Whilst we were upon the rivers that irrigate the woods upon the coast," says the Prince von Wied, "we saw this proud red bird, and recognised it at once by its voice, size, and streaming tail, as it slowly beat the air with its long large wings, and steered its course through the blue air." "The habits of this beautiful bird," continues the same author, "resemble those of other parrots. At noon we generally saw them sitting quietly upon the

strong under-branches of a large tree, the neck drawn in, and the long tail hanging straight down. Except during pairing time, they fly in small companies in search of different kinds of fruits, especially those of various species of palms, on the hard shells of which they are very fond of trying their powerful beaks. Notwithstanding the noise they usually make, like other species of parrots they become at once perfectly silent so soon as they have found a tree laden with suitable produce, and when they settle upon it, their presence is only indicated by the fall of the husks, which they bite off and throw down. During the cold season of the year we often found them busily seeking out the fruit of a creeping plant called *sphinxha*; they climb up its tangled stems very adroitly, and it is then easier to shoot them than under other circumstances. Their crops were quite full of the white seeds of this plant; at other times we found their beaks dyed blue by some species of fruit that they had eaten."

Le Vaillant says, in his "Natural History of Parrots," that the Araras are stupid birds, which do not fear the hunter's gun; but we must say from our own experience that in the unfrequented woods of Brazil, where they are very numerous, these Macaws are amongst the slyest and most cunning of their race. While sitting upon a tree feeding, the whole party are quiet, or only utter a low sound, which somewhat resembles the murmur of human conversation; but during their flight, or when disturbed, their voices are loud enough. They shriek most wildly when the hunter steals upon them unobserved, and disturbs the unsuspecting company in the middle of their meal by a shot, and on such occasions often raise a deafening uproar. Their loud scream is very harsh; it consists but of one syllable, and somewhat resembles the cry of our ravens. Like all other parrots, these birds are much attached to their mates. "In April of the year 1788," says Azara, "Manuel Palomares, who was hunting about a mile from the city of Paraguay, shot an Arara, and tied it to the saddle of his horse. The mate of the dead bird followed the hunter to his home, which was in the centre of the town, and remained for several days upon the same spot; at last it allowed itself to be taken by hand and domesticated." "In pairing time," says the Prince von Wied, "the Araras endeavour to find the breeding place they have formerly occupied. The nest is always made in some large tree, that has either an open cavity or a hollow place, which they soon enlarge to the requisite size by the help of their strong beak. In this the female lays two white eggs, resembling those of most other parrots." Schomburghk tells us that the long tail of the parrot often proves fatal to the brood, by betraying the presence of its owner, as it hangs out of the hole in which the nest is situated. Azara assures us that the couple never leave the nest, dividing the care of it between them; and should any one approach, they testify the greatest uneasiness. The young do not cry out for food, but signify their wants by tapping at the sides of the tree. Like the nestlings of other parrots they are very ugly and helpless, and for some time after leaving the nest require the protection and care of their parents. The natives prefer taking them unfledged, as they are then very easily tamed. Caged Araras always seem to have been favourites with the Indians. "We saw with great interest," says Humboldt, "large Araras flying about tame in the Indian huts, as pigeons do with us; these birds are great ornaments to the Indian poultry-yard, and do not yield in beauty to the Peacock or Golden Pheasant."

It must, however, be rather dangerous to have Araras flying about in such close vicinity, if only on account of the undesirable use they often make of their formidable beaks, and yet in some instances they become very tame. An individual in the possession of the Prince von Wied had full liberty to fly about the apartments, but preferred being near its master. It allowed him to catch it, or to carry it on his hand about the room, and would stroke his cheeks in a blandishing manner with its dangerous bill.

This species never learns to speak as well as other parrots, but is nevertheless not quite deficient.

in the necessary talents. "My Arara," wrote Siedhof, "has shown a great facility for speech, imitating my magpie, which can talk very well. For more than four months after it came to me it was quite dumb, not even uttering its frightful cry. I therefore hung it where the magpie, which chattered incessantly, would be near it, and it had been exactly ten days there when it began to imitate its companion. Now it can call my children by name, and learns directly whatever it is taught. It has, however, one peculiarity, namely, that it usually only speaks when alone." The Scarlet Arara can endure captivity for many years; we have heard of one that was kept forty-four years in the same family. The Scarlet Macaw is sought after with equal zeal both by white men and natives; and the European sportsman rejoices when a well-directed shot puts him in possession of one of these magnificent birds. "Carefully," says the Prince von Wied, "and concealed by thick bushes or trees, the hunter creeps towards them, and sometimes brings down several at one shot. If wounded, the bird clings to the branches by its strong beak and claws, often hanging a long time in that position. Should the pursuer obtain the desired booty, it furnishes him with most agreeable food; the flesh is very like beef; that of the old birds is tough in winter, and often very fat; but when cooked it makes excellent soup. The beautiful feathers are used in many ways; every native who has killed a macaw decorates his head-dress with the brilliant red and blue plumage. The Brazilians make pens of the quills from the tail, and many savage tribes employ the other feathers as ornaments. The dark ones from the tail are selected to feather their arrows. Even at the present time many deck themselves with these magnificent plumes. Formerly the tribe of the Lingoës manufactured ornamental articles from these feathers, which they kept, until wanted for use, in boxes closed with wax. The Tapi-nambes on the eastern coast, when making a feast on the death or devouring of an enemy, began it in very festal array; the slayer of the deceased was rubbed with a certain kind of gum, and then thickly covered with small Arara feathers; on his head was a crown, formed of the tail of this beautiful bird."

THE SOLDIER ARARA.

The SOLDIER ARARA (*Ara militaris*), a magnificent bird, is not inferior in size to the species described above. The general colour of its plumage is bluish green; on the under side, and over the joints of the wings, this is mixed with brown; the cheeks are white, with several rows of small brown feathers; a narrow strip of blood-red feathers runs across the forehead; the wings are blue on the outer side, beneath they are of a greenish yellow, black at the edge; the prevailing colour of the tail is red, blue at the tip, and beneath greenish yellow; the outer feathers are blue on both sides; the beak and feet are black. This species is spread over the district near the upper part of the Amazon, and reaches northward as far as the United States,

THE ANAKAN.

The ANAKAN (*Ara severa*) is only $1\frac{1}{2}$ feet in length, its breadth $2\frac{1}{4}$ feet; the tail measures nine inches, and the wings ten inches. The Anakan is altogether more slenderly built than any of its congeners with which we are acquainted, and its colours are less brilliant. The plumage is usually green, shaded into blue on the top of the head; the forehead is reddish brown, the wings blue above and dull red beneath; the primaries blackish on the inner border, the secondaries green at the edge, blue at the tip, in the middle bluish crimson. The beak is black, grey at the tip; the cere and the bare cheeks, which seem to be covered with rows of small pointed black feathers, are of a yellowish flesh-colour, as are the eyes; the feet are black. The Prince von Wied found the Anakan, which is spread over all the tropical regions of America (the islands included), principally in the primitive forests, in the vicinity of rivers. It lives on the highest



AFARA MACAO ——— SCARLET MACAW

(about 1918 quarter to size)



THE SCARLET MACAW (*Ara Macao*).

trees, and is often seen perched upon the branches, sometimes even in heavy storms of rain, which it willingly allows to soak its feathers. During the breeding season it lives in pairs, at other times in flocks.

The Anakans search the woods for fruit, and very often do great damage to the maize; their flight is astonishingly rapid, and their voice loud and harsh, but shriller and weaker than that of the large Araras. When a party of these birds is perched upon a tree, they utter soft, strange notes, as though talking together, the sound resembling the murmur of conversation. The male and female often sit in pairs on the high branches. The flesh of this bird is much esteemed, both by natives and Europeans, and, indeed, is excellent.

In the Macaws we have been describing, the prevailing colour of the upper feathers is a more or less bright green; but in the following genera blue predominates.

THE ARARAUNA.

The ARARAUNA (*Ara Sittace Ararauna*) is a very well-known bird, not inferior to any of the preceding in magnificence. The body is somewhat smaller, the tail, on the contrary, longer, than in the Scarlet Macaw; it may be reckoned as thirty-seven inches long, of which quite twenty inches belong to the tail; the wing measures twenty inches from the shoulder to the tip. The eye is greenish white, the beak and shoulder black. The forehead, a great part of the tail, and also a ring round the throat, are green. This colour changes above into light blue, whilst the under side is of the colour of the yolk of an egg; the same is the case with the tail. The upper and under tail-covers are blue. The outer webs of the wings are darker, those of the inner webs almost black, but only on their upper surface, for the under side shades off into dull yellow; the same is the case with the tail-feathers. The lower part of the face is more darkly coloured than the upper throat; the chin is almost black, the bare cheeks are white, with three rows of blackish feathers.

According to the statements of travellers, the habits of the Araraunæ are very similar to those of the Scarlet Macaw. The extent of country over which they are found is not exactly known. Schomburghk saw them sitting in considerable numbers on trees upon the banks of the Rio Takutu. They are seldom found on the eastern coast, and have long been driven from the inhabited districts.

THE HYACINTH-COLOURED ARARA.

The HYACINTH-COLOURED ARARA (*Anodorhynchus hyacinthinus*) has with great reason been regarded as the type of a peculiar race, for this bird differs from the rest of its family in the same way as the Nose Cockatoo differs from its fellows. The highly curved upper mandible is of considerable size, and much stronger than in other macaws, with a sloping, elongated hook at its extremity, which bends in the shape of a sickle over the under beak. The cheeks are thickly feathered, and only a small circle round the eyes and another round the under beak is bare. The plumage is of an uniform ultramarine, the crown, neck, wings, and tail are more darkly coloured than the throat, breast, and belly; in some lights it shimmers with pale sky blue. The wings on the lower side, the inner webs of the wing-feathers, and the under side of the tail, are pale black; the outermost wing-feathers sprinkled with black. The beak is of a brilliant black, the feet greyish black, and the eyes brownish black. The naked place near the eyes, and also a narrow featherless border around the beak, are dark yellow, lightly powdered. In size, this species is scarcely inferior to the Macaw;

its length is thirty-eight inches, of which the tail measures twenty-two. The length of the wings is sixteen inches.

Little is known of the habits of the Hyacinth-coloured Arara; we learn that it is principally found in the river districts of Rio de Francisco, and from thence to the Amazon. These birds are not very numerous, and are constantly seen in pairs instead of flocks. In comparison with the rest of their family, they have little shyness, and their voices are seldom heard.

We may consider the PARRAKEETS, or CONICAL-TAILED PARROTS (*Conurus*), although much smaller, as the next relations to the Araras, from which they are easily distinguished by the circumstance that their cheeks are feathered. Some have a bare circle round the eyes, whilst in the smaller kinds the feathers reach quite to the eyelids. The beak is comparatively strong, but short and broad; the cere is thickly feathered, and the nostrils, which are placed in the middle of the forehead, are surrounded with bristle-like feathers. The plumage is generally green, and relatively simple; still there are very magnificent species among them. Such an one is

THE GARUBA.

The GARUBA OF BRAZIL (*Conurus luteus*) is a splendid bird, of bright egg-yellow colour, only varied by the green and black upon the wings and tail. The head and wings are usually of a brighter colour than the rest of the body; the wings are externally green, tipped and bordered with black; the beak greyish horn yellow; the foot flesh-coloured, varied with grey; the narrow bare places round the eyes whitish; the eyes are dark orange. Its length is fourteen and a half inches, six inches of which belong to the tail. The length of the wings is about the same. The north of Brazil, particularly the country near the Amazon, is the principal habitat of the Garuba, but nowhere is it found in great numbers.

THE TIRIBA.

The TIRIBA (*Conurus leucotis*), a bird only nine inches long, four inches of which must be reckoned for the tail, is certainly the most elegant and charming of all parrakeets. The crown is brown, and shines with a metallic bluish green lustre; the rim round the forehead, the cheek-stripes, the cheeks, and the throat, are cherry colour. The part near the ear is white; the neck, rump, and wings dark green; the point of the tail and the middle of the belly, as well as the wings near the shoulder, are red; the breast is olive green; and the feathers on the upper part of the neck are indicated by a black-edged stripe, prettily marked. The wings are externally bluish green, and black within. The tail is green, the upper part touched with cherry colour, and the lower part with blood red; the horn-grey beak terminates in a white point. The feet are dark ash grey, and the eye-rings orange; the narrow bare place around the eyes is blackish. The female is somewhat smaller than the male, from whom she differs but little in colour. In the young birds the tints are paler, and the feathers only slightly marked.

The Tiriba is met with in many parts of the eastern coast of Brazil; these birds abound in forests, and particularly in such as have not been cleared; they are also found in great numbers on the sea-coast, and at no great distance from human habitations. Except in pairing time, they are always in large flocks, and if disturbed dart like arrows from the tops of the trees, shrieking loudly. They climb very dextrously, employing the beak freely, and carefully guarding their long tail from being injured by the branches. It is very difficult for the sportsman to distinguish them in their haunts, on account of their green colour, and if they fear danger they will remain perfectly motionless and quiet. It is only when flying that they raise their voices loudly and repeatedly. When there are

plantations near the woods, they will, like other parrots, do considerable damage, but are less destructive to maize than to rice. After breeding time they appear more numerous on the outskirts of the woods, accompanied by their young, whom they feed out of their crops until they have nearly attained their full size.

The nest is built in the hollow of a tree, and contains from two to three white eggs. Some species, according to Schomburghk, are favourites with the Indians, so that we often find whole flocks



THE GARUBA (*Conurus luteus*).

of tame parrakeets near their settlements. The Brazilians generally place them on a stick, which they fasten to the outside of their houses, fixing one end into the plaster wall.

THE CAROLINA PARRAKEET.

The CAROLINA PARRAKEET (*Conurus Carolinensis*) is the only parrot found in North America. Its length is from ten to twelve inches, and the wing seven inches; the prevailing colour of the plumage is a pleasing green, darker on the back, and somewhat yellowish on the under part; the forehead and cheeks are reddish orange, as are likewise the back of the head, shoulders, and wings. The neck is of a pure gold colour; the large wing-covers olive-green, with yellow tips; the primary quills deep

purplish black ; and the middle tail-covers near the shaft blue. The female is of a paler colour than the male, and in the young the forehead is of an uniform green.

The Carolina Parrakeets are found as far as forty-two degrees north latitude, and seem to be capable of enduring very severe weather, for Wilson tells us that he saw a flock of them fly screaming along the banks of the Ohio, during a snow-storm in February. Solitary individuals are sometimes met with still farther north, even as far as Albany ; but these are only such as have lost their way. The favourite haunts of these birds are districts overgrown with a weed called wrinkled burdock, the seeds of which they obtain in spite of its armature of strong thorns ; they often invade plantations in great numbers, and do much damage, destroying far more than they eat, and are therefore bitterly hated by the owners, and actively pursued.

We have full particulars of their life and habits from Wilson, Audubon, and the Prince von Wied. "The Carolina Parrakeet," says Audubon, "eats or destroys all kinds of fruit, and is on this account most unwelcome to the planter, the countryman, or the gardener. The stacks of corn in the fields are often visited by large flocks, which hide them so completely that they present the appearance of being covered with a brilliantly coloured carpet ; the birds hang round the stacks, draw out the straws, and destroy twice as much of the corn as is necessary to satisfy their hunger. They come in crowds to assail the fruit trees in a garden, pluck the fruits, bite them open and take out the soft and milky kernel, proceeding industriously from branch to branch, until the tree that had looked so promising is entirely stripped. It is easy to understand that these attacks upon their property are avenged by the planters, and that regular war is waged against the Parrakeets. Ten or twenty of them often fall at one shot, but the survivors always come back to the same place, so that many hundreds are killed in the course of a few hours." The Carolina Parrakeet," says Wilson, "is a very sociable creature. Should one of a flock be wounded, the rest instantly return to it, uttering loud anxious cries, as they settle on the nearest tree. After repeated shots they will not alter their behaviour, but come nearer and nearer to the fallen bird, and fly around it with plaintive screams."

It would be hard to find a greater contrast than is noticeable between the rapid flight of the Carolina Parrakeets and their lame, helpless movements when on the branches of trees, and still more when on the ground. They fly in closely-packed masses, rushing along with loud resounding cries, generally in a direct line, sometimes in graceful curves, which they seem often to vary for their own amusement. Their favourite trees are sycamores and plantains, in the hollows of which they find a resting-place, and hang to the bark like woodpeckers, clinging by the beak and claws. They sleep a good deal, retiring many times in the day to their holes to take a nap. They eat salt readily, and for this reason are always to be found in great numbers near salt works. Wilson gives us the following information concerning a Carolina Parrakeet that he tried to keep :—"As I was anxious to learn whether this parrot would allow itself to be easily tamed, I took one under my care that had been slightly wounded in the wing. I prepared for him a kind of bower at the stern of my boat, and threw him burdocks, which he continued to eat from the time he came on board. The first day was pretty equally divided between eating and sleeping, and at times he gnawed the bars of his cage. When I left the river and travelled by land I carried my prisoner with me in a silk handkerchief, disregarding all the difficulties which such an undertaking must involve. The road was bad beyond description ; there were dangerous rivers and lakes to swim across, whole miles of morass and thicket to encounter, and other hindrances to overcome ; many times the parrot came out of my pocket, and I was compelled to dismount to seek for it amongst the brushwood. When we encamped in forests I placed it on my little bundle near me, and took it up again in the morning, carrying it in this manner more than a thousand miles. As soon as I reached the hunting-ground of

the Chickasaws I was surrounded by these people—men, women, and children—who regarded my companion with great astonishment and loud laughter, calling it in their language ‘Kelinky;’ indeed, Polly was ever after a bond of friendship between us. When I reached my friend Dunbar’s house I procured a cage, and placed it in the verandah; from whence my captive used to call to the flights of Parrakeets that sped over the place, and day by day we had numerous troops of them hovering about, keeping up a lively conversation. One whose wing was slightly wounded I placed in Polly’s cage, to the great delight of the little solitary, who approached it instantly, and whispered her sympathy at its accident, stroked its neck and head with her beak, and took it to her heart at once. The new comer died, and Polly was for many days inconsolable and restless. I then placed a looking-glass near to the place where she usually sat. My ruse succeeded, her happiness was restored, and for a time she was beside herself with joy. It was quite touching to see her, as evening approached, laying her head on the image in the glass, and testifying her happiness by a gentle note. After some time she learned her name, and answered to it; she would climb up my body, perch on my shoulder, and take bits from my mouth: there is no doubt that I could have succeeded in training her, had not an unlucky accident caused her death; she left her cage one morning before I rose, and was drowned in the Gulf of Mexico.”

The Prince von Wied substantiates the preceding account; he found these Parrakeets in the early spring in enormous numbers near the Mississippi, and they have been also seen near the Lower Missouri, but never towards the upper part of that river. The Indians in the neighbourhood of Fort Union wear the skins of these birds as ornaments on their heads.

THE CHOROY.

The CHOROY of the Chilians (*Enicognathis leptorhynchus*) is well deserving of notice, on account of the peculiar shape of its beak. There is nothing particularly striking in the plumage, which is of a nearly uniform dark green, blueish on the wings, their tips being spotted with black; the tail-feathers are brownish, and blood red at the tip. The bird is green above, with a red streak upon the brow, red cheek-stripes, and a few insignificant dark bands on the top of the head, which are visible through the points of the corresponding feathers; the lower part of the body is green, with red spots between the thighs, larger in the male than in the female. Its length is about fourteen inches, six and a half of which belong to the tail. The Choroy reminds us of the Long-beaked Cockatoo, on account of its prominent and elongated upper mandible, and we are told that its habits are similar. These birds congregate in troops of many hundreds, and the noise they make is almost deafening. They are most destructive to maize and wheat fields, and also to apple-trees, the fruit of which they gather only for the sake of the pips. This species is found over large tracts of the Pampas, and is rather a ground than a tree bird.

THE LONG-TAILED PARROTS, OR PARRAKEETS.

THE LONG-TAILED PARRAKEETS (*Palæornithes*) inhabit the Old World, and notwithstanding the peculiarities whereby the different families are characterised, bear a common impress. All are distinguished by their very slender shape and pointed tail of the same length as the body, and by their flowing, magnificently-coloured plumage. They are distributed over the whole of Central and Southern Africa, a great part of India and Australia, and in favourable situations are met with in large flocks. The Australian type differs from the Asiatic and African principally in having a comparatively broad tail, and is on that account often referred to another group.

THE COLLARED OR ROSE-RINGED PARROT.

The COLLARED PARROT (*Palæornis torquatus*) is elegantly formed and strikingly coloured. The entire length of the male is from fourteen to sixteen inches, ten of which must be allowed for the tail; the length of wing is about six inches from the shoulder to the tip. The colour of the plumage is generally a bright grass green, brightest on the top of the head, palest underneath, and darkest on the wings: on both sides of the throat, and about the cheeks, this colour changes to a delicate sky blue, which is divided from the green of the neck by a dark blackish stripe on the throat, and a splendid band of rose red feathers; the tips of the tail-feathers are also sky blue, and the under part of the tail and wings yellowish green. The beak is bright red, with a dark tip to the upper mandible, the feet grey, the eye yellowish white. The young birds before moulting may be distinguished from the old by their paler and uniform light green colour.

The Rose-ringed Parrakeet is spread over the whole of Africa, and is found from the western coast to the eastern borders of the Abyssinian mountains, the wooded parts of which are especially favourable to its mode of life and habits; it does not always seek the extensive unbroken primitive forests, which cover the lower parts of the interior of Africa, but is often seen in limited tracts of woodland, among the thickly-foliaged evergreens, which afford a safe retreat during the entire year. In Western Africa it is seen on the coast; in Northern Africa we have found it as far southward as fifteen degrees north latitude, but did not observe it in those parts of the mountainous coast of Abyssinia through which we travelled, and only met with it in the neighbourhood of monkeys; indeed, after repeated observations we concluded that we could safely reckon upon always finding it where monkeys were to be seen, and *vice versâ*. It would be difficult for travellers through their haunts to overlook the Rose-ringed Parrakeets, as they announce their presence by loud, discordant cries heard above all the noises of the forest; their associated bands, after uniting and thus increasing to large flocks, often take possession of some of the thickly-leaved tamarind or other trees, and from these resting-places fly daily across a greater or less tract of country. In the early morning they are tolerably quiet, but soon after sunrise go forth screaming in search of food, and the whole flock may then be seen flying hurriedly over the woods. The African forests are comparatively poor in fruit, but the plants that grow under their shadow are prolific in seeds of all kinds, which entice the parrots to the ground; nevertheless, except when the small round fruit of the bush known as "Christ's thorn" is ripe, they seldom descend from the trees. It is probable that they will also take animal food; at any rate, we have often observed them busy near ant-hills and the dwellings of Termites. They are rarely seen in the fields bordering on the woods of Central Africa, although tame birds may be fed solely upon the Caffre millet and durrah, the corn of that country; it would seem, however, that they prefer fruits and seeds to the last-mentioned diet.

Until mid-day the flocks are busy satisfying their hunger, after which they fly to seek water, and then rest for some hours among the branches, chattering and screaming; but in spite of their noise they are difficult to find, owing to their green colour, which is scarcely distinguishable from the foliage; moreover, they are perfectly silent the instant that they observe anything unusual, or creep stealthily and quietly away if they fear pursuit. The longer you remain under a tree beneath the top of which you have just heard hundreds of voices, the stiller and quieter it becomes, until at last all is silent; one bird after the other has noiselessly crept away to a distance, from whence a joyful cry tells that their cunningly planned retreat is happily accomplished.

Towards evening they again assemble, and make (if that is possible) a louder shrieking than before; for now the question is not only which is the best branch to rest upon, but the safest sleeping-place. During the spring time, when the woods are decked in magic beauty, the parrots

always sleep in holes in trees, but in the dry season they prefer the foliage; leafless trees they consider dangerous.

Although these birds fly well, their movements on the ground are clumsy, and even their climbing very awkward; their flight is extremely swift, but seems fatiguing; it requires many quick strokes with the wings, and changes into a hovering motion if the bird wishes to alight. Their gait can scarcely be called a walk, but rather a waddle; the body is swung forward, and the long tail carefully raised that it may not touch the ground. A party of Parrakeets progressing in this manner provokes involuntary laughter, as there is something most comically serious in their movements.

The Rose-ringed Parrots breed during the African rainy season, which comes with the spring; at which time the gigantic *Adansonias* are crowned with their thickest foliage, and the numerous holes in their trunks hidden in the most desirable manner; here the breeding birds settle in parties, and after some strife about holes, the pairs live quietly together. In those parts of Africa through which we travelled, Europeans shoot these birds, but the natives never molest them with weapons, and only capture them when they have an opportunity of disposing of them alive. Notwithstanding the numbers in which they are found, it is not very easy to procure a specimen, as their cunning deceives even a practised sportsman, and renders his efforts fruitless. After some time, however, we learned to turn their tricks to their own disadvantage; when we found a party of them in the woods, one of us would creep to the nearest and thickest tree, while another disturbed that they were on; the consequence was that the parrots, as they tried to escape, generally fell victims to the marksman who was watching their arrival.

The natives take the young unfledged birds out of the nest, or surprise the old ones at night in their holes. They are extensively captured in Senegal, and from thence come most of the Rose-ringed Parrakeets that we see in captivity. During the time we spent in Africa, we had many of these birds alive, but never succeeded in becoming very friendly with them; we gave them as much freedom as possible, allowed them to fly about a large room, fed them well, and hoped to retain the whole troop; but we were sadly deceived in our expectations, for they fell murderously upon each other, and the strong ones bit the weak to death; in most cases they broke the skulls of their victims, and ate their brains, after the manner of our Titmouse (*Parus*).

On the other hand, we must own that we have often seen bird-fanciers keep dozens in small cages, and learnt, in answer to our questions, that they lived together in the greatest harmony. Connoisseurs have told us that with care they can be made very tame, and will show great affection for their master, but rarely learn to speak, or only in the most imperfect manner. Their plumage forms their greatest attraction.

THE BETTET.

The BETTET (*Palæornis pondicerianus*), together with other allied species, is found throughout India and the neighbouring islands. In size it resembles the Rose-ringed Parrakeet, but differs from it in the markings of its more variegated plumage. Green is also here the prevailing colour, but the delicate rose red that marks the neck of the former is in this bird spread over the whole breast, and, in the male, extends over the top of the head. The whole mantle is green, the sides of the wings yellowish green, and here and there the feathers have more or less broad yellow edges; the tail-feathers are blueish green above, on the under side yellowish green; the belly is green, but much paler than the back. The head and breast contrast splendidly with these leaf-like tints; it is difficult to describe the mixture of colours they present; we can only say that the head is of a blueish or greyish rose red, while a narrow band on the forehead, and the marks on the cheeks, heighten the effect of the bright and glowing tints on the neck. A line on the forehead, which reaches to

the eyes, and the streaks upon the neck, are of a dull black ; the breast is of a pale brick red ; all the feathers having narrow grey edges to their tips, as though suffused with a greyish vapour. The beak is black, the feet greenish yellow, the eyes yellowish grey. The two sexes are distinguished by the colour of the head, which in the one has a reddish and in the other a greenish lustre. We have one of these birds alive before us, but cannot say whether the red-headed is, as we fancy, the male, or the female ; the colours of both are equally beautiful. Bernstein tells us that although this parrot is principally seen in Java, its distribution is very unequal, for whereas in some parts it is quite a common bird, in others it is not to be found without strict search. It inhabits hot low-lying districts, or sometimes promontories to the height of 4,000 feet, but never frequents mountains. It is always to be met with in the coffee-plantations, where it soon betrays its presence by its loud screaming voice, although it knows so well how to conceal itself from observation amongst the foliage, that it is much oftener heard than seen.

During the day Bettets fly in pairs or small parties through the gardens or thickets in the neighbourhood, and towards evening assemble upon their trysting-place—a large, thickly foliaged tree, or bamboo plantation—where they pass the night together. “If you happen to know such a tree,” says Bernstein, “and place yourself near it towards evening, you will see a very attractive exhibition. When the sun goes down, the birds come gradually from all sides ; as soon as the first has arrived, it raises its voice joyfully and commences a performance in which all new comers join, so that at last the concert increases to a perfectly deafening noise, which only ends as the last ray of sunset disappears. Then all go to roost, and are only disturbed when a solitary bird, whose little sleeping-place is not comfortable, flies about to seek another perch, or drive a companion from its place ; should this happen, the general annoyance is loudly expressed, and the disturber of their repose soon settled with a few sharp pecks. With the first appearance of daylight, the flock separates until the following evening, when all seek the same tree or bush, and pass the night together as before.”

During the breeding season these birds live in pairs, and the evening assemblies do not take place. The nests are made in holes of trees, and the strong beaks of the parrots are very useful in preparing them. We only succeeded in finding one nest, and that was in a hollow in a Puda tree some forty or fifty feet above the ground ; it contained but one pure white egg, but the ovary of the female showed plainly that there were more eggs to lay. The Bettets we have seen in captivity were very tame, and appeared mild and gentle in their demeanour ; we learnt from trustworthy sources that they may be easily taught to speak very fluently.

Among the Australian parrots the SUPERB PARROTS (*Polytelis*) remind us most of those just described. The only two known species are moderately large birds from fifteen to sixteen inches in length, slenderly formed, but with tolerably strong beaks, the upper mandible reaching far over the lower one.

THE SCARLET-CRESTED SUPERB PARROT.

In the SCARLET-CRESTED Species (*Polytelis Barrabandi*) the plumage upon the back of the neck, upper and lower parts of the body, is grass green ; the fore part of the head, the cheeks, and the throat, king's yellow ; the wings and tail deep blue, shaded with green ; the neck surrounded by a crooked line of scarlet ; the eyes are orange ; the beak bright red ; the feet ash grey. The female is distinguished by its somewhat less brilliant plumage, its dull blueish grey face, its dusky rose-red breast, and scarlet loins. The young resemble it in colour, but are less beautifully marked. This bird is not rare in New South Wales, and in the interior is tolerably numerous.

THE BLACK-TAILED SUPERB PARROT.

The BLACK-TAILED SUPERB PARROT is found in numerous flocks on the banks of the Murray, and lives principally among thick shrubs and upon the gum-trees. Its food consists of seeds, buds, and the honey which it obtains from the blossoms of the Eucalypti. Its flight is very rapid; its voice a loud screaming cry, which becomes a discordant chatter when a flock settles.

We are more intimately acquainted with the so-called GRASS PARROTS (*Platycerci*), a beautifully marked, small-beaked, high-footed race, whose short tail is broader at the end than at the root. They are found in New Holland, distributed over the whole of that continent; and, as they keep together in flocks, are very troublesome to the settlers. In their habits they have much in common with the Sparrow Parrots and with the Finches. They run more than they climb, frequenting the country roads, like our sparrows, the fields, like our finches, or the grassy plains, like the reed sparrows, and are only found in the woods, or on solitary trees, during the time that they roost. They wander much about the country, and appear unexpectedly in great flocks in certain places, which they leave as suddenly when food becomes scarce. Most species eat seeds exclusively, preferring those of different kinds of grass. They differ remarkably from other parrots in the circumstance that the female lays from six to ten eggs, and rears a numerous family. They can generally endure captivity, but do not enjoy the company of mankind, and seldom learn to distinguish their friends from those whom they have cause to fear.

THE ROSELLA.

The ROSELLA (*Platycercus eximius*) is a truly splendid bird, thirteen inches in length. The fore part of the head, back of the neck, breast, and under tail-covers, are scarlet; the cheeks white; the feathers on the back black, bordered with yellow; the rump, upper tail-covers, and belly, with the exception of a yellow spot in the middle, are of a bright pale green; the middle of the wings bright blue; the quills dark brown, the outer border blue; the two middle tail-feathers green, changing to blueish-green; all the rest blue at the root, shading into light blue, and tipped with white; the beak is horn-coloured; the foot brown; the pupils blackish brown. The young, when they leave the nest, have a coat very similar to the old birds, without its full brilliancy; they are also recognisable by their yellow beaks. These beautiful parrots are natives of New South Wales and Tasmania, where they are very common, but only in especial districts, often bounded by a brook, over which they will not pass. They do not congregate in large flocks, but in small groups or families. Open countries are their favourite resorts, or grassy hills and plains planted with high trees or groups of bushes. From these trees, which become the central point of their movements, they fly over the little sandy plains or open country into the woods to seek their food. They are as often to be found upon the roads as our sparrows, and, like them, if startled, only fly to the nearest tree or hedge by the wayside, soon returning again to the ground. Travellers are unanimous in saying that the impression made on Europeans by the profusion of these magnificent birds surpasses description. The Rosella flies in curves, with rapid strokes of its wing, but seldom to any great distance, as it is soon fatigued; it moves with ease upon the ground, and is quite equal to our Finches in agility. The voice of this species, like that of most of its congeners, is a pleasant pipe, which might almost be called a song. Its food consists of seeds of different kinds, principally those of grasses; but it will also at times eat insects; the breeding-time is in the months of October and January, which answers to our spring. The female lays from seven to ten beautiful elongated white eggs in a hole in the branch of an Eucalyptus, or some similar tree.

THE VARIEGATED PARROT.

The VARIEGATED PARROT (*Psephotus multicolor*) must be regarded as one of the most splendidly coloured of the Grass Parrots, amongst which it is numbered on account of its moderately short wings and unevenly graduated tail. It is about a foot in length, and nine to ten inches in the spread of its wings. This bird inhabits the interior of Australia, being very numerous on the banks of the rivers. The plumage is remarkable on account of the variety of its colours. In the male the forehead and shoulders are brimstone-coloured; the under tail-coverts yellow; the lower part of the belly and legs scarlet; the rump striped with yellowish green, dark green, and reddish chestnut brown; the wings and lower wing-coverts deep blue; the middle tail-feathers blue; the outer ones blueish green, tipped with pale blue; the beak horn brown; and the feet yellowish brown. The female, whose plumage is similarly marked, only differs from the male in the inferior brilliancy of colouring, being of a yellowish brown on the throat and breast, and only slightly striped on the back of the head and wing-coverts. We have but slight knowledge of these birds either in their natural state or in captivity.

The Variegated Parrot is, undoubtedly, one of the greatest acquisitions that a connoisseur can make; it is the ornament of every aviary, and, like its congeners, pleases as much by its docility as by the splendour of its plumage. It will also breed in our own country. "My father," says Neubert, "possessed a pair of Variegated Parrots, which were always very cheerful and extremely attached to each other. One was a little larger than the other, and in colour far more beautiful, for that which in the little one was yellow and orange, was in the larger bird orange and flame colour, and so on throughout the different tints. On account of this circumstance, these birds were always supposed to be male and female, and this opinion was strengthened by observing that they showed the greatest affection for each other. After a time the lesser bird—whom for the sake of brevity we will call the female—was always busy on the ground; it seemed melancholy, and ate scarcely anything, but was constantly fed by the male out of his crop. One morning there lay a beautiful white egg in the cage, which the female watched most carefully. My father at once fastened a willow basket to the cage, filled with materials for a nest, and placed the egg upon it; the female, however, lifted it again to the bottom of the cage. On this we gave them a common wooden box, in which a hole was cut, and filled it with soft materials; both birds immediately busied themselves in turning them out, and in chipping some very fine shreds off the inside of the box, on which to lay the egg. From this time the female seldom came out of the box, but the male frequently went in to feed her. Several other eggs were laid during the next few days, some being larger than the rest. The devotion of both birds to the task of incubation increased daily, and they became so heated as to lose the feathers from the under part of their bodies. As time went on, neither of them came out, or only very rarely, to eat. At length we observed that one was dead; the other continued to sit upon the eggs, but died after a few days. The eggs were examined, and proved to be addled. It was only on the birds being stuffed, that the reason of our disappointment was discovered; both were females, and had laid unfertile eggs. Many English and Belgian collectors have succeeded in making the Variegated Parrots lay, so we may hope to see these beautiful birds more numerous amongst us."

The Australian continent would seem to be a veritable Eden for the Parrot tribes! The dazzling Cockatoos peep like gorgeous flowers from the masses of green foliage, and the Scarlet-coated Rose Parrakeet glitters amongst the yellow blossoms of the acacia, whilst Honey-birds swarm in blithe and busy parties about the various trees, and the otherwise deserted plains are animated by the presence of the little Grass Parrakeets. Parrots abound in Australia, as do the swallows in our villages and roads, and are met with everywhere in all their variegated beauty. When the farmer is about to get

in his harvest, these birds appear before his barns in large flocks, seeking, like pigeons, for stray corn among the stubble. Poetical travellers have often been inspired by the ever varying spectacle presented by such gorgeous objects; but the settler hates them from the bottom of his heart, and avenges himself for their depredations by shooting them with the same indifference as that with which our country folks kill sparrows.

THE WAVED PARROT (*Melopsittacus undulatus*).

This beautiful bird is of small size, though its long tail makes it seem larger than it is; its length is from eight to nine inches, and the span of its wings ten inches. The body is slender



THE ROSELLA (*Platycercus eximius*).

and elegantly formed, the tail long and graduated, the wings comparatively long and pointed, the beak moderately large, with a long curved point. The cere, in which the large nostrils are placed, is broad and slightly inflated; the feet long, the toes slender, the outer one being longer than the inner. The beautiful grass green that predominates in the plumage is prettily marked; the whole of the mantle—that is, the back of the head, neck, top of the back, shoulders, and wing-covers—are pale yellowish green, each feather being edged and spotted with black and brown, more finely on the neck and head than on the back; the under side is of a beautiful uniform green. The parts of the face, that is, the fore part of the head, vertex, and throat, are yellow, bordered and spotted with four bright blue spots, of which those upon the checks are the largest, while the others look like three little round drops. The wings are brown, the outer web of the quills dark grey, spotted with greenish yellow; the tail, with the exception of the two blue middle feathers, is green in the middle. Each feather is striped with yellow, the eye-rings yellowish white, the beak horn-coloured, the feet pale blue. The female is distinguished from her mate in being somewhat smaller, and

by the different colour of the cere ; with her this is greyish green, whilst in the male it is a bright blue. The young are without the deep blue spots on the throat, and the regular markings on the head, which is entirely covered with delicate stripes ; when only eight months old, they assume the plumage of the parent birds.

Shaw was the first naturalist who became acquainted with and described the Waved Parrot, and Gould is the only traveller who gives us any information respecting its natural state ; from him



THE WAVED PARROT (*Melopsittacus undulatus*).

we learn that these birds inhabit the whole of the interior of Australia in enormous numbers, especially where there are large tracts of grass, the seeds of which they eat.

When Gould was investigating the plains in the interior, he saw the Waved Parrots flying about, and remained for some time in the vicinity, in order to observe their habits and mode of life. They came in flocks of from twenty to one hundred to a small lake to drink, and from this locality flew at stated times over the plain in search of the seeds which are their exclusive food ; they went to the water in the greatest numbers in the early morning, or as it grew dark in the evening. During the heat of the day they sat motionless under the leaves of the gum-trees, the holes of which were just then occupied by the pairs who were laying, and as long as they remained quiet, were with difficulty

perceptible. When going to the stream, they alighted freely in large flocks upon the dead twigs of the Eucalypti, or on the branches that hung down to the water. Their activity is wonderful, and their flight very rapid, resembling that of the falcon or swallow; they run upon the ground with facility, but their feet are ill adapted for climbing among the branches of trees. When on the wing they utter a screaming cry; and whilst perched amuse each other with a caressing kind of twitter, which might almost be termed a song. The Waved Parrot congregates in parties, even during the breeding-time, although pairs are easily distinguished by their faithful devotion to each other. The nest is made in the holes and fissures of gum-trees, and in December contains from four to six eggs of a pure white colour and somewhat round shape. By the end of December the young have flown out and are capable of providing for themselves; they then collect in great flocks, that fly about in company with the old birds. As soon as the breeding-time is over, the flocks begin their migrations, during which they pass regularly from south to north, and only return to their breeding-place when the grass-seeds are ripe. Throughout South Australia they appear in spring, and also in autumn, with the same precision as our migratory birds. Some years ago only solitary Waved Parrots were occasionally seen amongst us; but at the present time every ship brings hundreds to Europe. Before leaving Australia, the captives are put together in wooden cages, the perches of which are placed like little flights of steps above each other, so as to hold a great number of birds in the smallest possible space. Such a travelling bower presents a most amusing appearance; the whole party sits in lines, so that one row of faces appears above the heads of another, and all eyes are fixed upon an observer, as they seem to beg to be freed from their confinement. Quarrels and strife have never been observed among them, and until breeding-time, thousands live most comfortably together, those of the same sex as happily as the little pairs do. We have seen one of the large cages of a bird merchant, that had formed part of a cargo of these birds, and contained more than a thousand pairs, all of which lived in great harmony. The Waved Parrot does not belong to the "inseparables"—that is, to those species that pine and die on the loss of their mates; but it loves the society of its own species, and prefers the company of the opposite sex. Sometimes it will associate with a small parrot of a different species, though it never shows the same attachment that it exhibits to its own. It is, however, necessary to keep these birds in pairs, as under any other circumstances they are never seen to full advantage. They require little change in their food, and can live upon millet or canary seed; they will also eat the juicy leaves of plants, cabbage, and other vegetables; but despise fruit, sugar, and dainties. In spite of their preference for dry food, they drink very little, sometimes not for weeks together, but their owner must not, on that account, neglect to give them fresh water.

Most parrots, however gentle their disposition, become quite insupportable by reason of their noise. This is, however, by no means the case with the Waved Parrots; they can produce a great variety of sounds, but never use their voice in such a degree as to become tiresome, or except to express pleasure. It is not too much to say that the male of this species should be reckoned among the singing birds, for its notes are something more than a twitter, and often become a very expressive though modest song; it may, indeed, be taught to imitate the notes of other good singers in such a manner as to deceive an expert ear. In order to rear these birds, they should be placed in a small room, which can be aired and warmed without disturbing the occupants; the floor should be strewed with sand, and the walls hung with boxes. It is advisable, but not necessary, to ornament the chamber with living and harmless plants, for these offer the best places for rest and concealment; evergreens are particularly suitable for this purpose. Holes should be made in hollow blocks of willow-trees, and divided into compartments by boards, so that many pairs may make their nests in the same block. A room of this description is by far the best for breeding purposes, but in most

cases a moderately-sized cage is quite sufficient. The most important thing is to leave the birds undisturbed, and keep them well fed.

It is necessary to be personally acquainted with these lovable little creatures, and to have observed them during the performance of their parental duties, to be able to understand the enthusiasm with which they are regarded; it is only during their pairing time that we become fully conscious of their many merits. "The male," says Devon, "is a model husband, and his mate is a model mother. He devotes his whole attention to his chosen one, never heeding another female, though she be in the same place with him; he is always zealous, devoted, and ardent—indeed, shows the utmost affection towards his partner. Perched upon a twig before the opening of the nest, he sings her his best song, and while she is sitting feeds her with as much zeal as pleasure. He is neither dull, quiet, nor sleepy, like many other husbands, but always cheerful and charming."

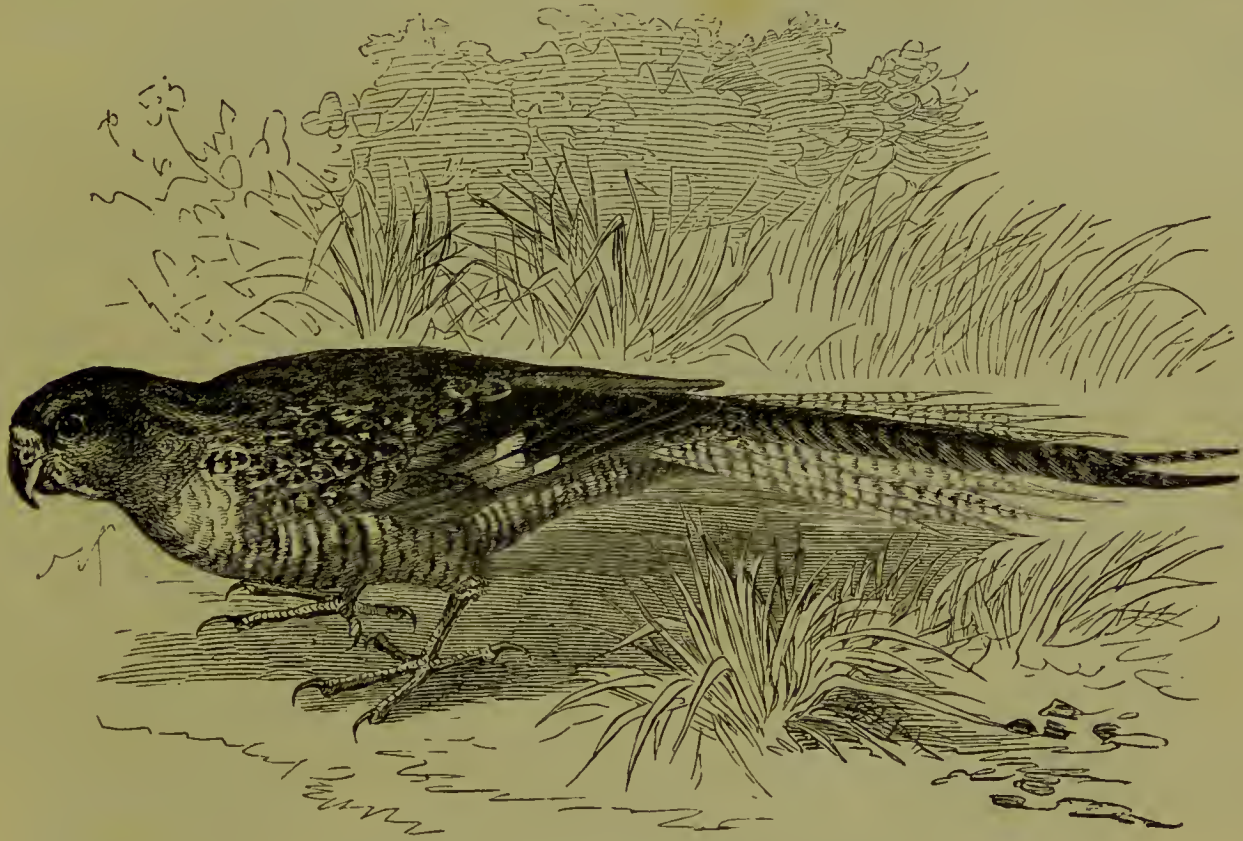
The building of the nest is the exclusive business of the female. She works with her beak at the entrance till it satisfies her, and then, more or less, at the interior, gnawing off little shreds, on which she lays, in the space of two days, from four to eight small, round, shining white eggs. She then sits for eighteen or twenty days most assiduously, and during the whole time is fed by the male, never leaving the hole except on the most urgent necessity. The young remain some thirty or thirty-five days in the nest, and only quit it when fledged. During all this time the mother is busily occupied in keeping their home clean, and, like a good housewife, clears out her little chamber every morning, and cleanses and purifies her offspring with extraordinary care. Immediately after leaving the nest, the young go in search of food, and a few days after conduct themselves quite like the old birds. Still, care must be taken, for the before-mentioned zeal of the father is often shown in an unexpected manner; he will fall upon his brood so boisterously, and seize them with so much roughness, that he kills them by his caresses. The first brood is no sooner fledged than the parents have a second, and even a third and fourth; indeed, Schlegel, the director of the Zoological Gardens at Breslau, declares that he has known them breed all the year round. Such cases are exceptional; three broods, according to our own observations, are the usual number. The last family of young may be left with the parents without danger, and then the first brood may be brought back. These show themselves to be quite as affectionate as their parents, and feed and take care of the nestlings. Moreover, they will imitate each other in everything—in climbing, flying, eating, and chattering—so that the noise in the nursery often becomes quite deafening, and sometimes seems to be too much even for the parents, who will then remove to a distance to get out of the way.

A pair of Waved Parrots in our possession occupied a large cage, in which they seemed very comfortable, but perhaps the bright sun, as it laughed at them through the windows, made them sigh for freedom. One day the female cleverly made her escape, and, before we discovered it, had flown through the window. We now learned to admire this bird from another point of view, as we watched its glorious flight, and may say with truth that we forgot to feel angry at our loss. The fugitive rose high into the air, and screamed with delight as it wheeled round and round with incomparable rapidity over a neighbouring garden; it flew quite differently to any parrot we ever saw—indeed, more like a falcon or a swallow, and was soon out of sight, but in a few minutes reappeared in the garden, apparently in consequence of the anxious cry of its mate, for we had at once placed the latter near the window. The lovers of these birds know that their tone is deceptively like that of our sparrows. It was the height of summer, and all the roofs were covered with young sparrows, who exhibited the greatest agitation as soon as the beautiful stranger appeared. The parrot had placed itself upon a plum-tree near the window, and from thence conversed with its mate. The young sparrows, who thought that the enticing chirp was intended for them, ventured near in flocks, regardless of the warnings and cautions of their elders, for though the latter seemed



THE CORELLA (*Nymphicus Newz Hollandica*).

astonished, they were far too old birds to be deceived, and would not approach ; the young ones, on the contrary, surrounded it in crowds. It took not the slightest notice of them, but they were not to be repulsed ; they became most pressing in their attentions, hopped quite close to it, looked at it with the greatest delight, and answered its chirp with all their little strength. When it became angry and flew off to another tree, the whole array followed, and it was only when the stranger began to exhibit its splendid powers of flight, that the sparrows were compelled to remain below abashed. This comedy lasted for about half an hour, and the whole length and breadth of the garden was filled with sparrows, when at last, love for its mate made the fugitive



THE GROUND PARRAKEET (*Pezoporus formosus*).

return to its room ; on this it was seized and put into the cage, where it was most tenderly received by its companion, and the crowd outside dispersed. In this country the Waved Parrots can be kept for whole weeks out of doors. In the spring of 1861, two pairs of these birds flew from a cage to the estate of a noted collector in Belgium ; they betook themselves to the tops of some high trees in a large park, and were lost during some time. While they remained at large, as it afterwards proved, they had made their nest, and reared a number of young ones. The owner of the property surprised a whole flock of from ten to twelve in a field of oats, where they were helping themselves ; from that time they were enticed with proper food, and before the winter ten birds were captured. Unfortunately, it was impossible to observe those that were still at liberty, as it would have been most interesting to learn if the strangers could survive one of our winters.

THE CORELLA.

The CORELLA (*Nymphicus Novæ Hollandicæ*) is closely allied to the Cockatoos, although belonging to the group of True Parrots. These birds are fully a foot long, and nearly the same in their spread of wing. The plumage is very variegated in its markings ; the fore part of the head, the tuft, and cheeks, are lemon colour ; the ear-coverings bright orange ; the back of the neck, the

two middle tail-feathers, and the outer border of the wings, brownish grey; the back, shoulders, under side, and outer tail-feathers, greyish chocolate brown. The shoulders and sides are the darkest; the upper wing-covers are white; the eyes dark brown; the beak lead colour; the feet blueish grey. The female resembles the male, except that the face and the crest are dark olive green; the feathers near the throat are brownish grey, those of the under parts of the body and upper tail-cover yellow; the four middle feathers of the tail are grey, the rest yellow, and, with the exception of the outer web, edged delicately with brown. Gould, whom we have to thank for a full description of the Corella, found this beautiful bird in great numbers in the interior of Australia. On the coast it is rare in comparison with the thousands seen on the plains of the interior, and in eastern Australia it seems to be more numerous than in the western parts of that continent.

In summer the Corellas build their nests near the Hunter and Peel rivers, and other streams running north, if they can find suitable trees. After the breeding season they assemble in innumerable flocks, which cover whole tracts of country, or alight in hundreds upon the overhanging branches of the gum-trees. In September these flocks begin to migrate to their breeding-place, and in February or March return to the north. They devour grass seed, like the rest of their congeners, but cannot live without water, and, therefore, must remain in the neighbourhood of a stream. They are very active, run with facility on the ground, and fly slowly but often to a considerable distance before they alight. They are but little afraid of man, and if startled from the ground, wend their way to the nearest tree, perch upon a branch, and, as soon as the danger is over, return to the ground; not being shy, they are easily captured. They lay five or six white eggs, about an inch long. Corellas have only lately been brought to Europe in any considerable number; at the present day they are to be met with in all large zoological gardens, and may be obtained from the principal dealers in birds. They require but little tending, and need no particular surroundings for breeding; but they should be left as much as possible to themselves. Two birds in the Hamburgh Zoological Gardens sat by turns on their eggs, the female from the noon of one day to the forenoon of the next, and the male in the intermediate hours. As far as we know, such a division of parental duties has not been observed in any other parrots.

THE GROUND PARRAKEET.

The GROUND PARRAKEET (*Pezoporinus formosus*) reminds us in many particulars of the Owl-Parrot, or Kakapo; its plumage is of similar colour, and its habits resemble those of that bird in many respects. The length of the Ground Parrakeet is about thirteen inches, the stretch of wing somewhat less; the plumage is dark green, striped with a still darker shade of the same colour; that of the upper side is dark grass green, each feather irregularly striped with black and yellow; upon the head and neck there are black lines. The neck and breast are pale yellowish green; the belly and under covers of the wings a beautiful yellowish green, with numerous curved black stripes; the brow is scarlet; the quill-feathers green on the outer web, and on the inner dark brown, spotted with pale yellow. The four middle tail-feathers are green, marked with yellow; the side tail-feathers, on the contrary, yellow, spotted with dark green; the eyes are dark brown, with delicate light blue circles; the feet and tarsi blueish flesh colour. Gould informs us that the Ground Parrakeet is spread over all parts of South Australia, including Van Dieman's Land; in the northern latitudes of that continent it has never been observed. This bird lives almost exclusively on the ground, and is seldom seen among the branches of trees. Barren sandy districts, abounding in low grass and weeds, or moors covered with rushes, constitute its favourite haunts; there it lives a retired life, either alone or in pairs, and is, therefore, almost impossible to find without the assistance of a dog;



THE GROUND PARAKEET

PEZOPORICULUS

Cass. 1822

it can run among the grass with great rapidity and persistency, or lie close to the ground, like a hen or a woodcock, in the hope of being overlooked, and when flushed will rise and fly quickly over the ground, making all kinds of zig-zags in the air, like a snipe, then fall again, and run hurriedly on. The eggs, which are white, are laid on the bare ground, and both parents assist in their incubation. The young assume the plumage of the adult in the spring, and separate from their parents as soon as they are old enough to provide for themselves. The flesh of the Ground Parrakeet is considered very excellent; it is more tender than that of a snipe, and in flavour not unlike that of the quail. The example figured in our coloured illustration (Plate II.) is the *Pezoporinus cornutus*, which differs somewhat from the preceding, especially in having two beautiful horn-like appendages to the head.

THE LORIES.

IN India and the neighbouring islands we find some species of Short-tailed Parrots called LORIES (*Lorii*), differing so essentially from those we have described, that modern naturalists are inclined to form them into a separate family. Amongst the points in which they are unlike other parrots, we must mention their comparatively long neck, and feeble beak, the slightly bent under-mandible, without notches at the edge, and closely compressed; the by no means fleshy tongue, divided at its tip into a bunch of horny fibres, and the streaming plumage, which is decorated with the most magnificent colours. Our knowledge of these beautiful birds in their native state is very limited; we are, however, told that the fibrous tongue is employed to lap up the sweet juices that exude from the leaves and blossoms of the trees, and that this very peculiar diet is the great hindrance to their being tamed or transported to any considerable distance; still, in spite of this, some species are occasionally brought to Europe, and will live for many years in a cage. They are docile, and may be taught to speak, but are quiet and languid when in confinement.

THE PURPLE-CAPPED LORY.

The PURPLE-CAPPED LORY, or LORIKEET (*Lorius domicella*), the largest and best known of these birds, is a really magnificent creature, about twelve inches long and twenty inches across the wings. The plumage is of brilliant scarlet, deep purple on the top of the head, the back of the head violet, the upper wing-covers green, the legs sky-blue; over the breast runs a crescent-shaped yellow line; the tail-feathers are scarlet at the root, striped with black towards the top, and dotted with yellow at the tips; the beak is orange-coloured, and the feet dark grey.

The Purple-Capped Lory lives in parties in the woods, which it never quits; its movements are lively, and its flight very rapid. It would seem that these birds do not subsist entirely upon the nectar from plants, as they may be reared without any particular care upon bread soaked in milk, or any kind of parrot food, and will live for years upon this diet.

We learn from the sailors who bring them to Europe that they are frequently offered for sale in India, but die in great numbers when in confinement.

THE DAPPLED LORIKEET.

The DAPPLED LORIKEET (*Psitteutes versicolor*) is a small bird of about six and a half inches in length. The plumage is much variegated; the cheek-stripes and top of the head are dark red, with a band round the neck of deep sky blue; the back blueish green, the wings green, the upper tail-covers light yellowish green, all the upper feathers being narrowly striped with yellowish

green, and the under-feathers streaked with yellow along the shaft; both sides of the belly and the inner side of the leg are spotted with purple. The primary quills are black, bordered at the edge with dark green, and surrounded by a yellowish line. The beak is scarlet, the foot a light ash grey, the cere and the bare patch around the eye are greenish white, the iris is reddish yellow, with narrow red rings around the pupil.

We are indebted to Gilbert for a short description of the habits of this species, which is found on the northern side of Australia, more particularly near Port Essington. These birds assemble, he tells us, in innumerable hosts, and settle upon the gum-trees in order to obtain nectar from their flowers:



THE PURPLE-CAPPED LORY, OR LORIKEET (*Lorius domicella*).

whilst a flock is in motion, their movements are so regular and simultaneous that they might be mistaken for a passing cloud, did not their piercing cries undeceive the spectator.

SWAINSON'S LORIKEET.

A Lorikeet nearly related to the preceding, called after Swainson (*Psitteuteles Swainsonii*), has been described by Gould as follows:—"The South Australian woods of gum-trees, extending to Moreton's Bay and Van Dieman's Land, shelter large flocks of Swainson's Lorikeets, the flowers of these forests furnishing them with a plentiful supply of nectar and pollen; such trees as have newly blossomed being preferred to any others by these dainty little creatures. The appearance of a forest of Eucalypti covered with blossoms, upon which various species of Parrots and Honey-birds are feeding, baffles all description; three or four different kinds may often be seen busily combining to rob the same branch; nor is it easier to imagine the thousands of tones and cries uttered by a flock when rising into the air, preparatory to leaving one tree for another." These swarms must be seen

and heard if we would form any adequate idea of them. During a morning's walk in the woods, near the Hunter river, Gould came upon an enormous gum-tree, about 200 feet high, in full bloom, upon which hundreds were perched in the utmost harmony; he killed specimens of all the four species of Lorikeet found in that part of the country upon one bough.

The flight of these Lorikeets is very powerful, and as straight as that of an arrow: they rise with surprising rapidity, dart through the air uttering noisy cries, and climb the trees with much adroitness, more in the manner of a Titmouse than of a Parrot. After sunrise they are so busily occupied in imbibing the nectar from the flowers, that they can scarcely be frightened from their



THE DAPPLED LORIKEET (*Psitteuteles versicolor*).

perch, and Gould found that the firing of a gun had no other result than a loud scream, or merely caused some of the birds to quit the branch that had been aimed at, and settle on another. So successful are they in their search for nectar, that it often streams from the mouths of those that have been shot if they are held up by the feet.

Little has been learnt by travellers of the incubation of this species, but it would seem that the flocks do not divide in the breeding season; as many couples build upon one tree as can find room upon it. The nest is made in the holes of trees during the month of October, and contains from two to four white round eggs. In certain parts of Australia the Lorikeets are great favourites with the natives, who string their heads into chains, with which they deck themselves as with garlands.

THE MAIDEN LORIKEET.

The MAIDEN LORIKEET (*Coryphilus Tahitiannus*), another member of this group, inhabits the islands of the Pacific Ocean, and principally Tahiti, from which it receives its name. It is a magnificent little bird, about six inches long, with a tail that measures two inches and a half. The

feathers upon its head form a sort of coif or cap ; the plumage is of uniform blueish purple, with the exception of the throat and upper part of the breast, which are of a dazzling white ; the lower part of the wing and tail covers are dusky black. Its habits are similar to those of other Lorikeets.

THE PAPUAN LORY.

The PAPUAN LORY OF RASMALAS (*Pyrrhodes carmosine Papuensis*) is one of the somewhat aberrant forms of this group. In shape it is more elongated than those we have just mentioned, and may be recognised by the two middle feathers of its tail, which are longer than the body, and make the entire length of the bird seventeen inches, of which no less than eleven inches must be allowed to these middle tail-feathers : it measures about fourteen inches across the wings. The plumage of the Rasmalas is bright and beautifully tinted, its general colour scarlet, interspersed with blue, golden, and grass-green spots ; the head, neck, and top of the back, and the whole of the under portion of the body, are scarlet, except two streaks of splendid sky-blue, edged with scarlet, which run over the hinder and middle parts of the head ; the sides of the breast and legs are spotted with yellow, the under tail-covers and the inner side of the legs are deep blue, the wings green, and the centre tail-feathers light grass green tipped with gold, these last colours being repeated upon the other tail-feathers, only that the latter are of a somewhat darker shade at their roots.

The Rasmalas is an inhabitant of New Guinea, and an article of traffic to the natives, who treat the dried skins as they do those of the Birds of Paradise, cutting away both the legs, before exporting them to Europe. As far as we know, this species has never been brought alive to our part of the world, and we are quite ignorant as to its habits and mode of life.

THE BLUE-STRIPED LORY.

The BLUE-STRIPED LORY (*Lorius cyanostriatus*), which we have selected as the subject of one of our coloured illustrations (Plate III.), may be regarded as the type of the beautiful race to which it belongs. Its small size, and comparatively feeble beak, the elevation of the tarsi, and the diminutive claws, are eminently characteristic, as also is the somewhat wedge-shaped tail. The prevailing colour of this species, like that of the Lories generally, is a brilliant crimson, which pervades the entire plumage, but is much relieved and set off by dark shadings of deep red, almost approaching blackness, which cover the hinder part of the back, overspread the extremities of the wings and tail, and vary the tints of the wing-covers, producing a very rich appearance, which is still further heightened by a row of feathers of ultramarine, wherewith the hinder part of the neck is ornamented as with a sort of cape. The eyes are surrounded by elongated patches of naked flesh-coloured skin, immediately behind which the ear-feathers, of a brilliant ultramarine blue, are rendered very conspicuous.



PASSERINE BIRDS (*Passeres*).

THE Passerine order we understand to include the FINCHES and their nearest relations, as also the Sparrows, and other families of similar structure. These birds have been usually grouped together under the name of CONIROSTRES, but as the adoption of this term would oblige us to include the RAVENS (*Coraciostres*), we shall avoid it, considering that the many peculiarities of the latter entitle them to be regarded as forming an order by themselves.

The Passeres, according to our definition, are rather small birds, the largest among them not exceeding the size of a Starling. Their shape is compact, the body strong, the neck short, the head thick, and the wings of moderate length, with nine or ten quills upon the primary, and the same number upon the secondary region of the wing. The tail is generally long, and contains twelve feathers; the foot small, and what is termed a *perching* foot, three of the toes being in front and one behind. The beak is thick and usually conical, occasionally hooked, and still more rarely crossed. The plumage is generally thick, and the feathers comparatively large and soft; their colouring is usually quiet; but this is by no means invariably the case; all are, however, devoid of metallic lustre, or possess it in a very trifling degree. There is a difference observable between the male and female, not always dependent on the plumage, the male being the finer bird; the young resemble the mother. Many species moult twice in the year, so that at certain times their plumage exhibits a more brilliant appearance than at others, owing to the rubbing off of the outer edge of the feathers. The internal structure of the body presents nothing unusual. Although the Passerine Birds are unquestionably far below the parrots in capacity, they are intelligent, acute, susceptible of being taught, and keen of perception.

Their flight is not so rapid as that of the smaller parrots, and consists of a succession of undulating movements, which change into a hovering motion when the birds are excited or about to alight. They can walk upon the ground, but generally hop; and though the latter mode of progression gives an air of awkwardness to some species, it contrasts favourably with the waddling gait of the parrots. Many species are able to hop nimbly among the twigs and branches of trees, but few can climb, and still fewer possess the peculiar clinging powers of the woodpecker and other really climbing birds. They prefer the neighbourhood of water, but none of them are capable of swimming or diving.

The Passerine Birds are citizens of the world; they can endure the climate of icy mountains and northern snows, and are met with in the glowing regions of the tropics. Hills and valleys, woods or fields, the reed-covered swamps or treeless plains, are equally tenanted by various races, as is the crowded city or the barren desert. In all these localities they will build their nests and educate their young. Turn where we will, we see them—indeed, they are as much a part of the landscape as the earth and sky. Notwithstanding the fondness they exhibit for wooded countries, we can by no means venture to call them *tree-birds*, as many species live exclusively upon the ground, and all frequent it more constantly than even the parrots. Open country near a wood is their favourite resort, and from thence they visit the surrounding gardens and brushwood. They are found but in small numbers either in deep forests, or on barren plains and mountains. Seeds, fruits, birds, and insects form their usual nourishment, and but few appear to be dainty in their selection. The Passeres are, almost without exception, of a social disposition, and solitary birds are seldom seen; they live in pairs during the breeding season, and keep together in parties throughout the remainder of the year, these parties

occasionally increasing until they become large flocks. It is usual to find several different species living together in this manner, and associating for many months; the cleverest become the leaders of the rest, and are obeyed, perhaps we should say imitated, by their little followers. Such are the flocks that settle on our fields in autumn, after they have reared their young and moulted their feathers. In the winter they generally establish themselves in our farmyards and streets. Many species leave their homes annually, and go southwards at the commencement of the winter; others only wander or take occasional journeys, whilst some are stationary. Our part of the world yearly receives a large number of guests from colder latitudes, in exchange for the native birds that have left us to winter farther south. During very severe weather, we are often visited by species from the far north, that perhaps have not been amongst us for years, driven from their home by a deficiency of the food that they generally find in their own country. Some amongst them seem to pay so little regard to the change of season that they will breed at any time of the year, and will carry on the work of incubation exposed to the icy cold of a northern winter, or the exhausting heat of the tropics. For the most part, however, they recognise the arrival of spring, and, like the poets, are inspired with their tenderest feelings during the month of May. At that season the large flocks have dispersed, and each pair is intent upon the duties inseparable from incubation to a degree that is seldom equalled by other birds. Their beaks are then as frequently employed in doing battle with jealous rivals, as in pouring out their songs of joy; their days are divided between singing and fighting; they eat with haste, exhibiting the greatest excitement in all they do. Each pair seeks a separate spot for its own nest, driving away all other birds, so that breeding settlements, such as we have elsewhere described, are rarely seen amongst them. The nests of the Passeres are of different forms, and exhibit very various degrees of skill in their construction. Sometimes they may be seen hanging from, or placed upon, waving twigs or thick branches; sometimes they are hidden among the foliage, or in holes of trees or fissures of rocks, and they may often be found concealed under bushes, among reeds, corn, grass, and even upon the ground. Their exterior is carefully formed of twigs, grass, hay, lichens, moss, plant-cotton, and such like materials, and is lined with softer fibres, moss, scraps of wool, hair, and feathers. The brood commonly consists of from three to eight eggs of various shape and colour, usually light blue or green, or yellowish grey, with markings of various kinds. In most cases only the female sits upon the eggs, and during the period of incubation she is fed by her mate, but sometimes the two sexes share this duty and sit in turn, appearing to rival each other in taking care of their little family. The young early attain their full growth, and seldom need the attention of the parents after they have left the nest, as they soon learn to seek their own food and associate together in flocks, flying about over a limited extent of country until the season for moulting arrives. The parents meanwhile rear another brood, sitting sometimes thrice in the year, whilst others breed but once in the twelve months. Many enemies pursue these small and feeble creatures—indeed, some falcons feed entirely upon them; those and their nightly pursuers, the owls, must be considered as their most formidable foes, though monkeys, lemurs, cats, weasels, bears, and shrew-mice, the tree-frequenting rodents, and some kinds of snakes, are dangerous enemies; indeed, man himself cannot always be numbered among their friends. On the whole, the damage done by Passerine birds is not very serious, and some of them are inexpressibly useful by reason of the enormous quantities of insects and seeds of noxious plants which they devour; still, there is no denying that many species become very troublesome, especially when they congregate in large flocks, and descend upon ripe corn or fruit-trees, and we readily acknowledge that it cannot be agreeable to have to entertain hundreds of thousands of these little destroyers for weeks together.

Amongst the very numerous Passerine races, we find some that might be called the PARROT-

FINCHES, for the same reason that we call the little "Love Birds" SPARROW PARROTS; indeed, the resemblance they bear to the parrots is very striking, as is seen not only in the contour of their body, but in its structure, as well as in their demeanour and peculiar habits. Such, for example, are—

The CROSS-BILLS (*Loxia*), which, although but few species are known, may be said to form a separate family. They not only differ from other Passeres, but from all other birds, in the formation of their beak. This very remarkable instrument is thick and strongly arched, its ridge or culmen is



THE LARGE-BEAKED CROSS-BILL (*Loxia pityopsittacus*).

high and rounded, the mandibles are broad at their origin, but suddenly separate, and terminate in sharp points that are bent across each other, the under-jaw being inclined sometimes to the right side, sometimes to the left, without any general rule being observable in this respect; there are, indeed, as many that have their beaks twisted to the right as in the opposite direction. It is, moreover, specially noticeable that the muscles moving the lower jaw are unequally developed on the two sides of the head, an arrangement which must be considered as a necessary consequence of the sidelong movements of the jaw. The head is large in comparison with that of other finches, the body short, but slender and high; the keel of the breast-bone is long and arched, resembling that of the

woodpeckers. The plumage is thick and soft, the wings of middle length, narrow, and pointed; the tail-feathers strong, narrow, and short, those at the side being considerably longer than those in the middle. The tarsi and bones of the leg are bowed inwards, and are short and strong; the toes long, with stout, curved, pointed claws. The eyes are small and prominent; the nostrils round, placed close to the forehead, and almost or entirely covered with hair-like feathers. The internal construction of the body does not differ from that of other birds of this order.

Like most other species belonging to the Passeres, the Cross-bills live in society, seldom leaving the woods, wherein they find fir-trees adapted to their support. They cannot be said to have any fixed residence, but are the gipsies of the feathered race; their home is anywhere and nowhere. It is by no means easy to discriminate between the different species of these birds, seeing that every extensive collection shows us many varieties, strongly resembling each other. We may, however, safely mention four different species belonging to Europe, and in the mountainous districts of Asia and America we also find about that number; all these, however, present not only the same general structure, but a similar colouring of the feathers. The plumage of the old male bird is of a beautiful vermilion or red-currant tint, while that of the young male is of either a reddish yellow, gold, greenish gold, or red chalk colour. The coat of the female is green, shaded into yellow or grey. The plumage of the birds before moulting is a light grey, streaked with a darker shade; the wings and tail-feathers are of a greyish black. The large head and strong beak, bulky feet, and short tail, make them appear very stout and clumsy, nevertheless they are really agile and rapid, flying quickly and lightly, hovering before they perch, climbing nimbly about among the branches, and are only awkward and out of place upon the ground.

THE LARGE-BEAKED CROSS-BILL.

The LARGE-BEAKED CROSS-BILL (*Loxia pityopsittacus*), the largest of all the Cross-bills with which we are acquainted, is from seven to seven and a half inches in length, and eleven and a half to twelve inches across the wings. The beak strongly resembles that of a parrot, and is very thick and high, bent into a crescent, each mandible terminating in a short hook. The prevailing colour in the plumage of the old male is either a dark or light vermilion; the wing and tail covers greyish black, edged with greyish red; the belly greyish white. The young male is recognised by its light-reddish tints, which upon the back are mingled with greenish yellow, and upon the rump with yellow. The female is dark grey on the upper part of the body, and the feathers have a more or less clearly defined edge of green or yellowish green. The under part of the body is light grey, the feathers being edged with greenish yellow; the wing and tail feathers are greyish black, dotted with greenish grey.

THE PINE-TREE CROSS-BILL.

The PINE-TREE CROSS-BILL (*Loxia curvirostra*), or FIR-PARROT, is a somewhat weaker and more slender bird than the preceding. Its length is from six to six and a half inches; its width across the wings ten and a half to eleven and a half inches. This species is distinguished from the foregoing by its longer and more delicate beak; the plumage of both birds being similarly coloured.

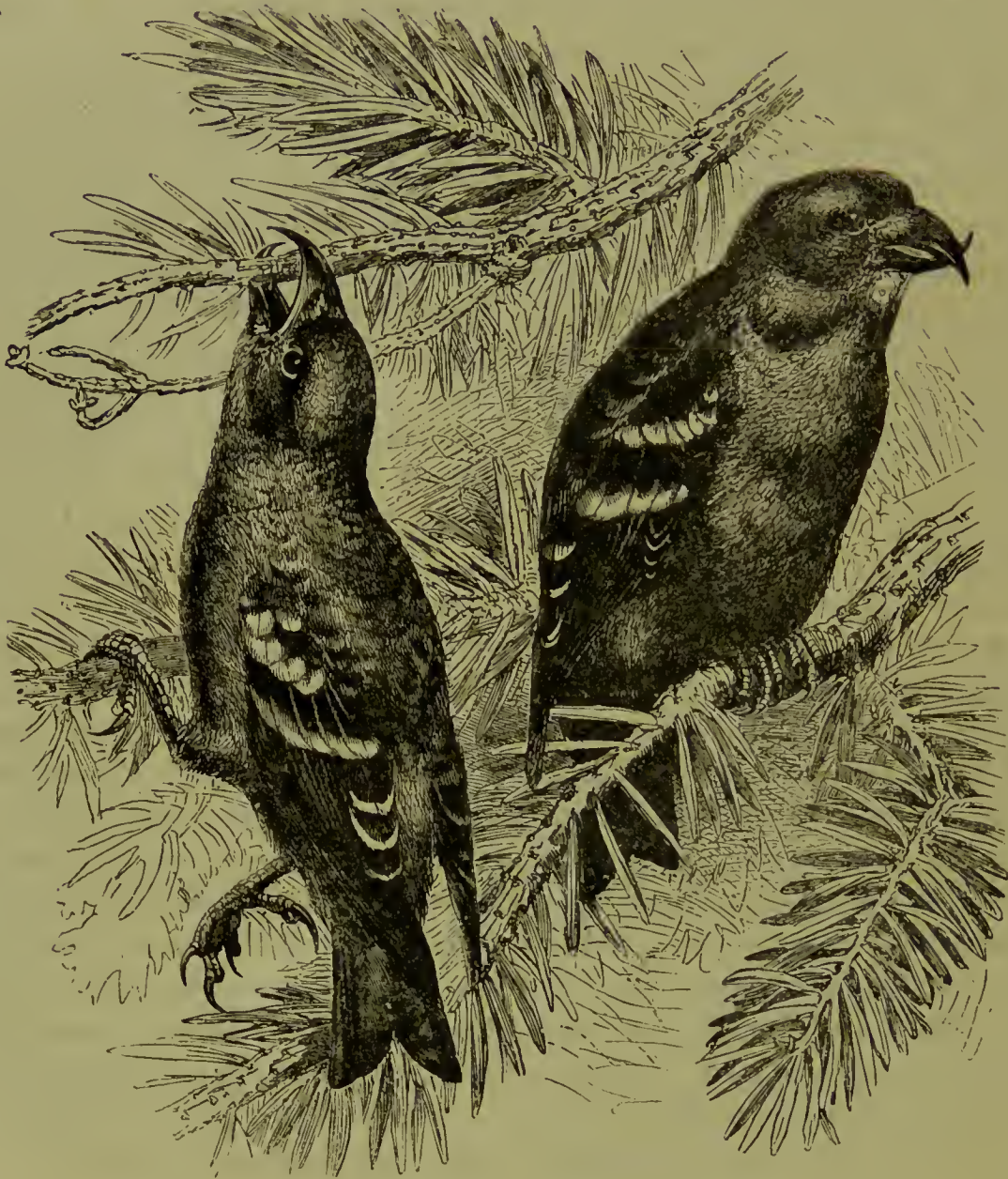
THE BANDED CROSS-BILL.

Next to these we must mention the BANDED CROSS-BILL (*Loxia tænioptera*), a much rarer species, smaller than the Pine-tree Cross-bill, and having a still more delicate beak. It is distinguished by two white lines upon the wings. We think it very probable that many other Cross-bills usually mentioned as varieties ought really to be considered as constituting distinct species.

The American and some of the Indian Cross-bills differ considerably from such as are found with us. Those in America are remarkable for the smallness of their size, and may be considered as the dwarfs of the family. The Cross-bills always inhabit pine-forests, as their food consists entirely of the seeds of the pine, fir, and larch; they are consequently more numerous in the north than in the south, seeing that in northern latitudes these trees are met with over a far wider extent of country than elsewhere. They are seen almost annually in Germany, but only when the seeds of the above-mentioned trees are ripe. When the cones are abundant they visit in great numbers many places where they have not been for years, appearing at irregular intervals, and not confining themselves to any particular localities. Should the situation be suitable, they will proceed at once to breed, otherwise they merely tarry for a short time, and then pass on to a more desirable resting-place. The most favourable spots in the woods are soon taken possession of to serve as their head-quarters, from whence they fly over the surrounding country, returning to settle upon the same trees in the evening. They are very social, living in pairs in the breeding season, but even during that period will sometimes associate in considerable numbers. Their nests are made among the branches of fir-trees, and there they disport themselves gaily, climbing nimbly, and assisting their movements, as parrots do, with their beaks. They will hang for minutes together head downwards, clinging to a twig or cone, seeming to enjoy this apparently uncomfortable position. Their movements, when on the wing, are undulating and rapid, but they never fly to any great distance. The pleasure they experience in the society of their mate is often testified by fluttering over the tops of the trees as they sing, after which they hover for a time, and then sink slowly to their perch. In the daytime they are generally in motion, with the exception of a short time at noon. During the spring, summer, and autumn, they pass their time in flying from one plantation or mountain to another. In winter, if the cold is extreme, they remain much longer in their sleeping-place, only coming abroad after the sun has warmed the earth, though they commence their song early in the morning. At this season they make their first appearance about ten o'clock, and are soon busily employed in search of food; about two o'clock they become quieter, seek food again at four o'clock, and then go to roost. The Cross-bill troubles itself but little about the other inhabitants of the woods, and is almost fearless of man, whom it is very evident it has not learnt to regard as an enemy. Should a female be shot, its mate will remain sorrowfully perched upon the branch from which his little companion has fallen; or again and again visit the spot where she was killed in the hope of finding her; indeed, it is only after repeated proofs of the treachery of mankind that he begins to testify any symptom of shyness. When placed in a cage, the Cross-bills become exceedingly tame, appearing entirely to forget the loss of their freedom, and grow so fond of those they are with as to obey them in everything, allowing themselves to be touched, or even carried about the room on the hand, and demonstrating their confidence in a variety of ways, so that the inhabitants of mountainous districts are usually much attached to these gentle little creatures.

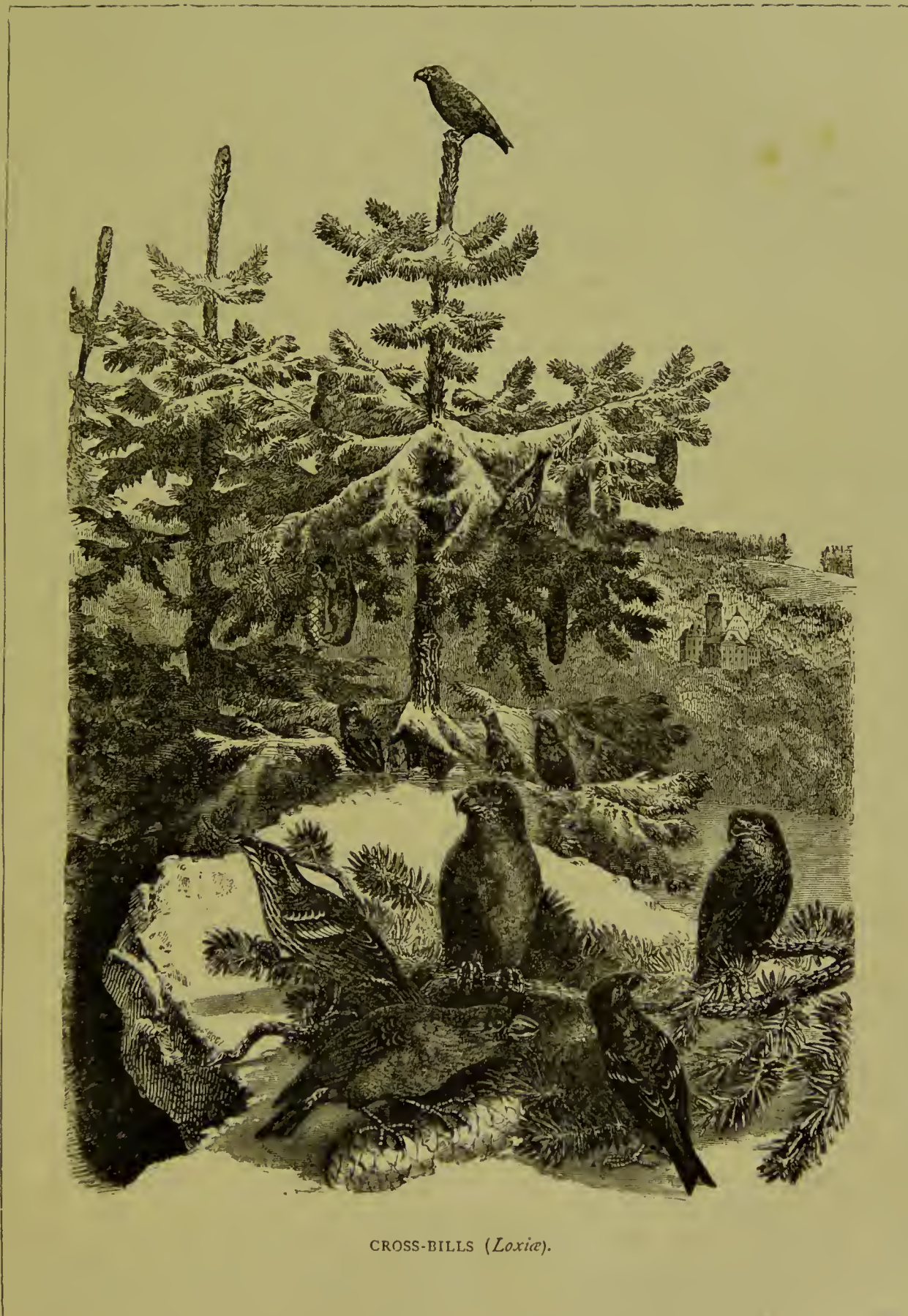
The call-note of the Pine-tree Cross-bill, common to both sexes, is "Gop, gop," "Gip, gip," "Yock, yock." This is uttered either whilst flying or when at rest; and so gentle is its sound, that the listener must be quite close to the tree in order to hear it; indeed, he might imagine the bird to be at a considerable distance, till, on glancing upwards, he beholds it perched just above his head. The cry of the Fir Cross-bill is shriller and weaker than that of the Large-beak. Those who have heard both species can scarcely mistake them. No sooner does one of them utter the sound of "Gip, gip," than all the rest become attentive, and generally fly away together, if the first bird sets the example; and if, whilst they are eating, other birds pass by, their cry of "Gip, gip," is intended as an invitation to join the party and partake of the meal. Should one be at a distance from the rest, the almost incessant cry of "Gop" will bring it back; it is also the signal for the whole flock to

settle. This last note is never uttered during flight. Whilst brooding, the Cross-bill employs a gentle sound, not unlike the piping of a little chicken whilst under the wing of the hen, and the young have a similar cry, mingled with the call-note of the parent bird. The song of the male is very pleasing, particularly that of the Pine Cross-bill; it consists of a cadence formed of a variety of weak twittering low notes. These birds are to be heard at their best when the weather is fine and warm, and are quite silent if the day is windy or stormy; whilst singing, they perch on the summit of the trees.



THE BANDED CROSS-BILL (*Loxia taniptera*).

The female has the same song as her mate, but it is somewhat gentler and more confused. In captivity they sing throughout the year, except during the moulting season. The food of the Cross-bill consists almost exclusively of the seeds of the forest trees, in obtaining which its strong crossed beak is of the greatest service, as it requires considerable strength and much skill to break open the cones of the fir and pine, in order to obtain the hidden seed. The bird perches upon a cone with its head downwards, or lays it upon a branch, and stands upon it, holding it fast with its sharp, strong, pointed claws. Sometimes it will bite off the cone and carry it to a neighbouring bough, or fly with great difficulty some ten or twenty paces to another tree where it can be opened, for a suitable spot is not to be found on every branch. If the cone is large, the little creature tears its way through the



CROSS-BILLS (*Loxia*).

middle of the outside with its upper mandible, inserts its half-opened beak, and forces an opening by a sideway motion of the jaws; it is then easy for it to pick out the seeds, which are soon swallowed. The breaking up of the husks produces a cracking sound, that is heard very distinctly from below. The cones are seldom completely emptied of their seeds, but are thrown down to the ground when scarcely touched, or not more than half cleared, so that the grass beneath the trees on which a party of these creatures has been perched is often completely strewn with them. When, however, there are no more to be gathered, the birds will seek and feed upon those they have previously flung away. The Pine Cross-bill seldom touches the far harder cones of other fir-trees, as it does not possess strength sufficient to open them, though the Large-beaked species breaks them without difficulty, and can at one stroke tear off all the husks into the midst of which it has plunged its beak. A cone is thus rifled of its contents in the space of two minutes, when it is immediately thrown down and another taken. Should the Cross-bill not be disturbed, it will remain for hours upon the same tree, and continue for weeks together in one part of the country. As long as fir-cones can be found, it seems not to care for other food; but if driven by hunger it will eat oily seeds such as those of the hemp or thistle, or even insects, seeking for them in the neighbouring gardens and orchards. These birds are cleanly in their habits, preening themselves carefully after every meal, and rubbing their beak for minutes at a time upon the branches, in order to cleanse it. Still, it is not always possible for them to keep their plumage trim, and their feathers are frequently covered with a coating of resin. The feeding of the Cross-bills on the fir-cones has another very remarkable result. Their flesh becomes so penetrated with resin that it will resist putrefaction for a lengthened period. It acquires by exposure a peculiar smell, but cannot be said to decay. We have made many experiments upon this subject, and always with the same result; there is a specimen now lying before us, which was shot during the extreme heat of last summer, and still retains its feathers. We have even seen a mummy of this bird which was twenty years old. That the resin imbibed is the only cause of this peculiarity is proved by the fact that specimens which have lived upon other diet for some time before their deaths, share the ordinary fate of dead birds. The Cross-bills are at all times a great ornament to our woods; but it is only in the winter, when the snow is on the ground, that we appreciate their full beauty. At such times their brilliant red forms may be seen perched on the dark green branches, and as the white, snow-covered ground throws them into strong relief, the fir upon which they rest presents the appearance of a vast Christmas tree. Their appearance is rendered still more attractive by the circumstance that they usually assemble to breed during the winter season; though they will also lay eggs during other months of the year—as readily in the height of summer as when the snow lies thick upon the branches, and all other living inhabitants of the woods are silent. They seem to trouble themselves but little about the change of seasons. At the breeding time the pairs into which the flock separates, choose the finest trees in the woods, whereon they make the cradles for their young, as near together as possible. The male then perches himself upon the highest branch of the most lofty tree, singing energetically, calling to his mate incessantly, and turning himself in all directions, seeming to wish to exhibit himself and his beauty to her in all points of view. If she, however, does not answer his call, he flies to another tree and recommences his song. Should she still linger, he chases her sportively from branch to branch, uttering his piping cry; at such times the Large-beaked Cross-bill accompanies these endeavours to attract the notice of his mate with a peculiar fluttering of his wings, often rising into the air and then settling again in the same place; these demonstrations continue till about noon, when the building of the nest commences. This is made upon some widely-projecting or forked branch, and is always situated so as to be well covered by the twigs that hang over it, partly to guard the little family from any snow that might fall, and partly for the sake of concealment. The nest is most artistically constructed. It is formed externally of pine twigs,

and lined with feathers, soft grass, and the needle-like leaves of the fir-tree. The walls are about an inch thick, and strongly woven together, the interior being tolerably deep. All the nests that we see in this country are thus constructed, and therefore it is rather surprising to hear from Eckström, one of the first Swedish naturalists, that in Sweden "the Large-beaked Cross-bill builds a round nest, formed of twigs, interwoven with other materials, and of such a large size that it is at least an ell in diameter; the entrance being perfectly round, and so small that the bird can only pass in and out with difficulty; while the interior is large enough to hold a man's fist. The winter nests," as he tells us, "are built in this manner; those for summer use are smaller, and have thinner walls." We mention this statement, though we are by no means sure that it applies to the species with which we are familiar. We had once an opportunity of observing a female Cross-bill whilst building. She commenced by breaking off dry twigs, and carrying them to the spot she had chosen for the nest, and then flew in search of such scraps as she could find, carrying away a whole beakful at a time, and laying them in their proper place. As soon as the rounding of the exterior nest was accomplished, the bird got inside and spent some time in pushing it with her breast and pulling until it was somewhat in order. She took all the materials from a neighbouring tree, and was so industrious that she continued her work during the afternoon, only requiring from two to three minutes to prepare and carry each load. The brood consists of from three to four rather small eggs, of a greyish or blueish white colour, streaked with faint blood red, reddish brown, or blackish brown spots; sometimes these spots take the form of a wreath round the broad end of the egg, and sometimes cover the whole of its surface.

The careful mother nurses her young with the greatest attention, whilst the male fulfils his task of tending her and supplying all her wants. The nestlings are fed from the first day of their life on the seeds of the fir or pine, softened in the crop of the old birds and half digested, but after a short time they are able to take them without this preparation. They rapidly attain their full size, and are active and lively, but require parental attention for the lengthened period during which their mandibles are not crossed, as until they are so the young are incapable of opening cones for themselves. After leaving the nest, they seek shelter in the thickest trees, in the vicinity of their parents, and while the latter are procuring fir-cones, as above described, will cry uninterruptedly, like naughty children, following the old birds hastily should they leave the tree, or calling long and dismally until their return. After a time they are taught to work, their parents commencing by giving them half opened cones to practise upon, and afterwards such as have only been bitten from the trees. When the young are quite independent in this respect, they form fresh flocks, or associate themselves with that of their parents.

It is easy to ensnare the Cross-bill if it is enticed to the ground by the help of a tame bird. In some parts of Germany high poles are prepared, covered with pine branches, in which limed twigs are concealed; these are then placed in the upper parts of the woods, and a decoy-bird fastened beneath them, which contrives to attract the attention of all that fly over it, so that many perch upon the bushes and limed twigs; in this manner numbers may be caught in the course of a morning.

We must leave it undecided whether a most remarkable species found in the Sandwich Islands be reckoned among the Cross-bills or not. Many naturalists have no hesitation in so placing it, though Reichenbach believes it to be more nearly allied to the Honey-eaters, with whom our readers will shortly be made acquainted, than to the Finches. This bird, which we shall call the PARROT-GREENFINCH (*Psittirostra psittacea*), appears to be even more of a connecting link between the Parrots and the Finches than the Cross-bill or the Parrot-Bullfinch, as its two names clearly express. In size it resembles our bullfinch, its length being about six and three-quarter inches, and the length of the wings three and a half inches. The plumage is of a beautiful parrot-green, intermixed with grey

upon the breast. The head and breast are of gamboge yellow, the wings and tail-feathers edged with green, and the back and legs of a black colour. We are entirely ignorant of such particulars of its life and habits as might give us any assistance in decisively assigning this bird to its proper place; it still may be numbered amongst our greatest rarities, as but very few collections can boast of a specimen.

THE BULLFINCHES (*Pyrrhulæ*).

THE BULLFINCHES are known by their short thick beak, arched in all directions, while the upper mandible terminates in a small hook. Their other characteristics are their short moderately strong legs and somewhat soft plumage, the nature and colour of which vary considerably in the different members of the family. These birds are found throughout the whole world, with the exception of Australia; but they principally frequent the temperate and frigid zones. They inhabit woods and bushes, as well as mountains and deserts, and pass as much of their time upon trees as upon the ground. Their food consists principally of corn, seeds of various kinds, and green leaves and buds. Being eminently social, they mingle freely with their congeners, and very soon become attached to man. In their movements they are somewhat clumsy, and much behind the Cross-bills in agility and beauty. Their song is very simple and pleasing, and to this some add the gift of being able to learn and imitate with great accuracy the notes of other birds. The nest is always carefully hidden in trees or the clefts of rocks. The number of eggs is from four to six.

THE PARROT-BULLFINCH.

The PARROT-BULLFINCH (*Paradoxornis flavirostris*) should, as its name testifies, be assigned the first place in this family. This is a very rare bird, and of striking appearance, inhabiting Southern Asia; it has not the beak of the true Bullfinch, the upper mandible not rising noticeably above the lower one, but curving outwards towards the sides, as in some species of parrots. The wings are somewhat feeble and decidedly rounded, the sixth quill being longer than the rest; the tail is long, graduated, and strong; the legs and feet very powerful, the toes of middle length, and the claws much bent. Its soft and flowing plumage is of a greyish brown, somewhat lighter on the under parts of the body, reddish brown on the back of the head and neck; the mantle olive-coloured, with a band of deep black round the throat and over the ear-covers; the face, skull, cheeks, and throat are white, spotted or striped with a darker colour, and there are tawny tints upon the belly, becoming redder upon the sides. The beak is of a brilliant yellow; the feet leaden coloured, the eye reddish brown. In size this bird resembles our common bullfinch, its length being about eight inches, three of which belong to the tail. The wing measures three inches from the shoulder to the tip.

All the varieties of Parrot-Bullfinch with which we are acquainted are inhabitants of the Himalayas. Jerdon tells us that the species we have just mentioned was seen by him in the Khana Mountains, at a height of about 5,000 feet above the level of the sea; and it has been observed by other travellers in Nepaul and Assam. "I found," he continues, "that they feed upon a variety of seeds, and saw a female with two or three young ones that strongly resembled her in colour; they were somewhat shy, but did not hide themselves, merely flying from tree to tree." Another species was found by the above-mentioned naturalist in the bamboo woods of the hilly districts of Nepaul, Sikkim, and Butan, where they feed upon all kinds of seeds. They flew

about in small parties, and appeared to be somewhat timid, allowing themselves to be watched, but seeking shelter when pursued. We learn from Tickell that they readily devour corn, maize, and rice. "After eating," says this writer, "they perch upon the branches of the trees and bushes, and have no appearance of living a retired life, as is the case with the Timalias. In some respects they resemble other bullfinches."

We are happily much better acquainted with the second tribe of the same family, the European species of which is named

THE PINE GROSBEAK.

The PINE GROSBEAK (*Pinicola enucleator*) deserves our notice, as being the largest of the Bullfinches. Its beak is vaulted on all sides, and the upper mandible somewhat hooked, in



THE PINE GROSBEAK (*Pinicola enucleator*).

this respect differing from other finches; the margin is slightly curved, and the extreme tip of the under mandible rather blunted. The legs are short and strong, the toes powerful, the claws large, and the wings, when closed, seldom reach beyond the first third of the tail; the latter is graduated to the centre. The Pine Grosbeak resembles the Singing Thrush in size, its length being from eight to nine inches, from three to three and a half of which belong to the tail; the breadth across the wings varies from thirteen to fourteen inches, and the wing measures four and a half inches from the shoulder to the tip. The plumage is rich, and somewhat straggling. In the old male birds, a pretty red shade predominates, whilst those of a year old are somewhat yellower; the throat is of a paler colour, and the wings marked with two crooked lines. The individual feathers are ash-grey, blackish along the shaft, tipped at the end with a red or reddish yellow, and dotted here and there in the middle with a darker shade; the edges, on the contrary, are somewhat lighter, thus producing a cloudy kind of marking. The wing and tail feathers are black, bordered with a light shade, these borders being much more distinct upon the shoulder-feathers. The beak is of a

dirty brown, blackish at the tip, the legs greyish brown, and the eyes dark brown. This bird inhabits the northern countries of Europe and Asia, and in America there is a very similar species. As far as we can ascertain, the Pine Grosbeaks live during the summer alone, or in pairs, and only assemble during the winter in flocks, that may be seen flying over the northern woods or frequenting the solitary farms, returning at the commencement of spring to their retreats in the forests. Should a heavy fall of snow occur and compel them to migrate to more southern parts, the flocks will join each other, and that often in very considerable multitudes.

In the years 1790-93-98, and 1803, such enormous swarms of these birds appeared in the islands of the Baltic, that in the country about Riga some thousands of pairs were caught weekly for a considerable time. They were also very numerous in Russia during the winter of 1821, and have been more recently seen in great numbers in various parts of Germany. We have to thank these involuntary wanderers for nearly all the information we possess concerning their habits, for we are but little acquainted with their mode of life in their native wilds. Whilst with us, they fly about in flocks during the day, eat in company, and settle in the evening all together upon the same sleeping-place, their favourite haunts being the pine forests, and they seem to prefer those in which the underwood is composed of young juniper-trees. They do not frequent thick foliage, but fly over barren plains as rapidly as possible.

When these birds first come amongst us they are harmless, confiding creatures, who have not yet experienced the artifices of man, never offering to stir if a stranger or hunter approach the trees on which they are perched, and will stare at the gun destined for their destruction without thinking of flight, even should one of their companions be shot down from the same branch. Persons have tried successfully to catch them by means of snares fastened to the end of poles, by the aid of which they could be thrown over the heads of the birds; indeed, the clumsiest kind of trap is all that is required to catch these unsuspecting little wanderers. The most touching tales are told of the attachment of the Pine Grosbeak to its mate. On one occasion, three out of a party of four had been captured, when, to the astonishment of all, the fourth crept into the net in order to share the fate of its companions. It must not be imagined, however, that these birds are really foolish, for experience soon teaches them its lessons, and they become distrustful, shy, and cautious. In its habits the Pine Grosbeak often reminds us of the Cross-bill; it is essentially a tree-bird, being quite at home upon a branch, but uneasy and out of place upon the ground. It can climb skilfully from one bough to another, hopping with ease to tolerably distant branches. Its flight is rapid, and, like that of most finches, rather undulating, and it hovers before perching. Its voice is flute-like and expressive, resembling that of the bullfinch, and its song, which may be heard throughout the whole of the winter, is very varied and pleasing on account of its soft clear notes. In winter we do not hear it in perfection, as it is then low and disjointed; but in spring, when the male rouses all his energies to cheer his little mate, his tones would satisfy the most fastidious critic; it sings during the clear light summer nights of its native land, and is there called on that account "the Watchman." This bird has many other good qualities, and, owing to its gentle, confiding temperament, may be easily tamed if properly treated. It becomes, in a few days, accustomed to confinement, taking its food readily from the hand, and will allow itself to be stroked, or even carried about the room, all the time testifying its happiness and content. It is an interesting sight to see a male and female bird in one cage, for their tenderness towards each other is extreme; but, alas! in one point they are deficient—they do not survive the loss of their freedom for any considerable length of time, and pine away rapidly, especially when their keepers forget that these children of the north must have fresh cold air, and foolishly confine them in hot rooms. The birds that come to us prove themselves almost entirely insensible to cold, and are lively and cheerful in the most severe winter weather. If shut up in a warm, close

chamber, they will climb uneasily around their cage, open their beaks and pant, thereby showing how unbearable and injurious they find the heat of such an unwonted climate. Under favourable circumstances they will live for a year in confinement; but their plumage does not retain its beauty after the first six months, turning yellow and losing its brilliancy. It is best to keep them, even during the winter, in an unwarmed room, or still better in a cage hung outside the house. In its native state the Pine Grosbeak feeds upon the seeds of the fir-trees, which it picks out of the open cones or gleans from the ground. It will also eat many kinds of seeds or berries, and looks upon green weeds and the buds of trees as dainties. Tame birds are fed with linseed, rapeseed, and juniper or mountain-ash berries; they require a considerable quantity of food, as they are large eaters. It would seem that in summer they live extensively upon insects, especially flies, and with these they probably feed their young.

We have but scanty knowledge of their manner of breeding. In one instance that came under our notice, the nest was made in a privet-bush about four feet high. It was very lightly built, and scarcely thicker than that of a hedge-sparrow, the outer wall being formed of dry stalks of plants, and the interior lined with horsehair. The brood consisted of four eggs of a beautiful bright blue, tinted at the broad end with reddish brown, and having a few chestnut-brown spots. In colour and marking they much resemble those of the Cherry Hawfinch. Only the female sits upon the eggs, but during her seclusion she is cheered by the song of her mate.

THE CARMINE GROSBEAK.

The CARMINE GROSBEAKS (*Erythrothorax*) differ from the preceding principally by reason of the smaller size, and consequently inferior strength of the beak, which is short, thick, somewhat bowed, vaulted, and elevated slightly at the ridge, with a scarcely perceptible hook at the tip. The feet are of moderate length and strong, the tail is tolerably strong and excised, the wings somewhat long in proportion to the body, the third and fourth quills being the longest. The magnificent crimson which forms the principal feature in the plumage of the adult male, distinguishes it from the female and from the young birds, whose colour is a greyish brown, or brownish grey; the males may be numbered among the most beautiful birds of the Passerine order.

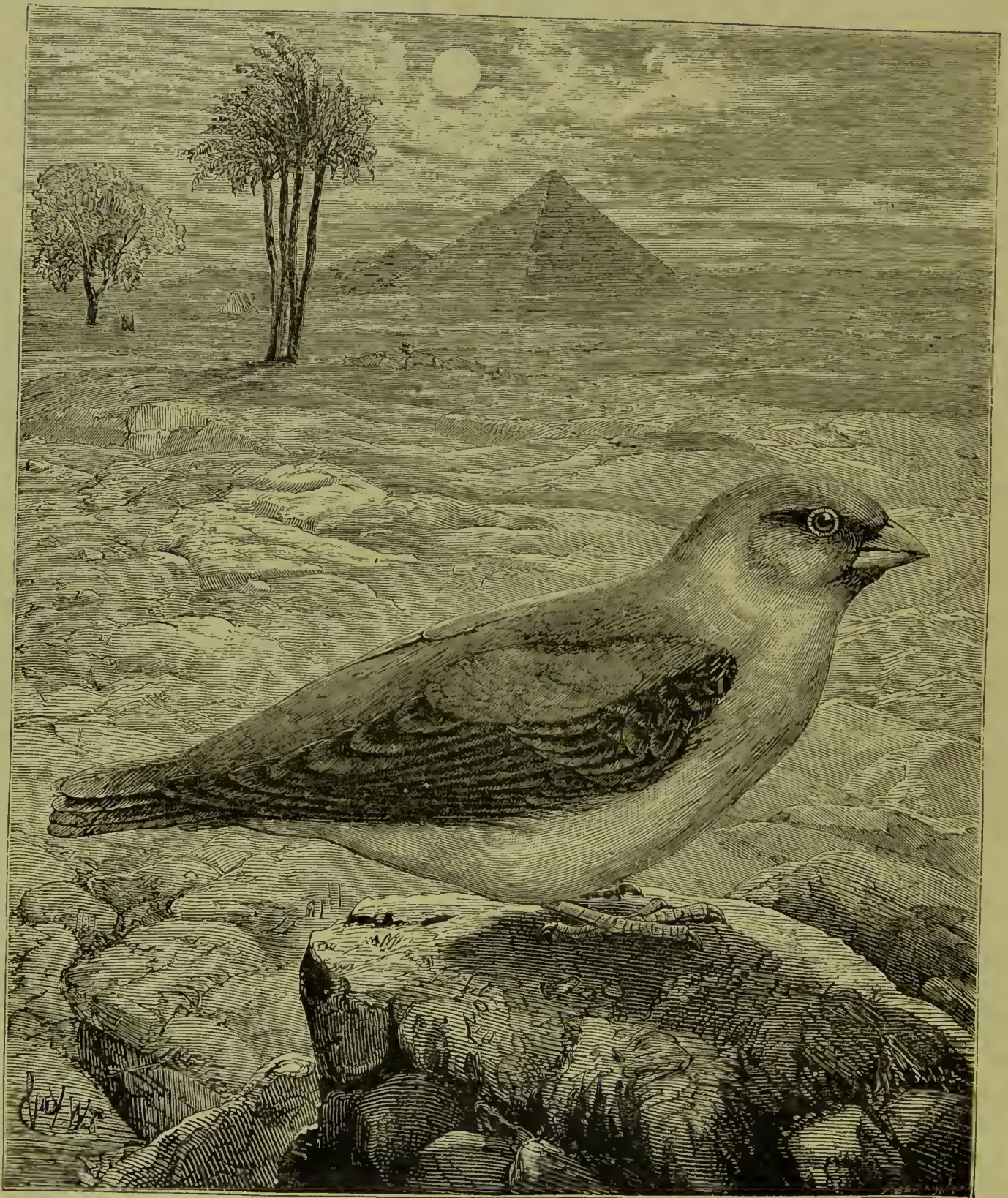
THE ROSE BULLFINCH.

The ROSE BULLFINCH, or ROSE FINCH (*Erythrothorax roseus*) is seven inches long and ten and a half broad. Its forehead is of a dazzling whiteness, and the rest of a brilliant carmine red; the wings are of the same colour, with two lighter stripes running over them; the under part of the body is also of a bright red. In the young male bird the plumage is of a reddish brownish grey, with dark streaks, and upon the wings there are two clear reddish yellow stripes. The female resembles that of the linnet. Rose Bullfinches were often seen by Radde upon the Bareja Mountains. During the month of September they lived in small parties of from six to twelve birds, but in winter they only flew about in pairs, and towards the spring disappeared entirely. Plantations of oaks or black birch-trees are generally preferred by these birds to any other localities, though they are fond of frequenting well-wooded valleys. About noon they separate and repose lazily and carelessly upon the branches; but during the forenoon, whilst seeking food, they are always active and on their guard against danger.

THE CARMINE BULLFINCH.

The CARMINE BULLFINCH, or RIBAND FINCH (*Erythrothorax erythrinus*) is six inches long and ten inches across the wings. The wing and tail feathers are deep brown, the upper part of the neck

bright carmine, and the breast white, marked with carmine red. The male of a year old and the female resemble the female linnet. The Carmine Bullfinches inhabit woods and districts covered with reeds in the north of Europe and Asia, and are found in great numbers in Sweden, Finland, and



THE DESERT TRUMPETER (*Bucanetes githogeneus*).

Russia. According to Jerdon, this species is also met with as a winter guest throughout India, being seen very frequently in the north, but more rarely in the southern parts of that country, principally inhabiting mountainous districts. "I have," he says, "generally found this bird in the bamboo plantations; indeed, it is called in the Telegu dialect the *Bamboo Sparrow*; it also frequents

gardens and thickets, and lives almost exclusively upon the seeds of the bamboo and of various other plants." The Carmine Bullfinch is often captured on account of its agreeable song: Radde met with it on the Steppes and at Baikal, but more frequently on the banks of rivers, and sometimes saw solitary individuals even at an altitude of 8,000 feet above the level of the sea. We are not much acquainted with the habits of this bird, but know that it prefers well-watered or boggy plantations, and feeds upon various kinds of seeds, amongst which we must no doubt include those of reeds, as it is principally met with where beds of the latter are to be found. In its demeanour it reminds us as much of a linnet as of a bullfinch. Its movements are light, its flight undulating, and its call a clear piping note. Blyth tell us that the "Tuti," as this species is called in India, has a weak, twittering, but gentle and expressive voice, the sound of which is something between that of a goldfinch and a linnet, while its call resembles that of the canary. In Kamschatka its notes have been imagined to sound like the Russian sentence, "*Tschewitschu widal—I have seen the Tschewitschu,*" the Tschewitschu being a large kind of salmon, which is the most highly-prized fish of that country, forming, as it does, a valued article of food; so that the song of the Carmine Bullfinch is not only looked upon as a herald of spring, but as announcing the blessings that she brings in her train. The nest is built in clumps of willows or canes, and always in the vicinity of water; it is formed of the stalks of plants, straw, or fibrous roots, and is lined with wool or horsehair. The eggs are larger than those of the linnet, and of a green colour, with red spots spread most thickly over the broad end. Tame Carmine Bullfinches are considered great curiosities; whilst writing, however, we are so fortunate as to have a male of this species before us. When it first came into our possession, the autumnal moulting was just commencing, and continued until December, leaving the once beautiful creature with a dull coat. Towards the middle of February it began to sing so charmingly as quite to exceed all our expectations. Naturalists who have described the notes of this bird have not by any means done it justice, for its song may bear comparison with that of the most gifted Finches; its voice is as melodious as it is copious. The call is uttered loudly, the actual song, on the contrary, being very soft, reminds us of the tones of the goldfinch, linnet, and canary. The habits of our tame bird are very entertaining; it is constantly in motion, hops about its cage with much alacrity, and will hang like a titmouse from the wires at the top. The shyness it at first exhibited has quite disappeared, and it now greets its acquaintance with a cry of recognition. It eats millet, canary-seed, and ants' eggs, taking but few of the latter; nor does it seem partial to green food. The Carmine Bullfinch is replaced in America by a similar bird, and a species very closely allied to it is found in Arabia Petræa.

THE SIBERIAN BULLFINCH.

The SIBERIAN BULLFINCH (*Uragus Sibericus*) is remarkable from the circumstance that, unlike most bullfinches, its tail is as long as its whole body; the fourth tail-feather on each side being the longest, the others graduating gently to the middle. The beak is of moderate size, and the upper mandible slightly bent over the lower. The fourth quill of the wing is longer than the rest. In colour the Siberian Bullfinch resembles the Rosefinch; the plumage of the old male is almost entirely of a rose colour, darker on the back, owing to the prominent marking of the shafts of the feathers. The head and throat are whitish, and of satin-like brilliancy, particularly after the moulting season. The lower part of the body is very brilliant, being of a bright carmine-red, and the beak is surrounded by a line of the same hue. The individual feathers are dark grey, lightly edged with pale carmine, and the wings and tail are also vividly tinted with the latter colour. The small upper wing-covers and shoulder-feathers are white upon the tip and outer web, or bordered with white, giving the closed wing the appearance of being white, marked with a crooked line of grey. The three external tail-feathers are also white as far as their dark shaft, and a dark border on the inner web, which becomes

broader towards the middle of the tail, the feathers in the centre being merely edged with white. The female is of an olive or greyish green. The Siberian Bullfinches inhabit the marshy, reed-covered districts of Northern Asia. In the autumn they congregate in parties of from ten to thirty, and fly about uttering a monotonous piping note. In Irkutsck these birds assemble in great numbers during the month of September, and many are captured by bird-fanciers; but they entirely lose their vivacity when in a cage, and do not long survive. In Oron the Siberian Bullfinch is found in company with the Bohemian Chatterer; large flocks are also seen in the Bareja Mountains about the end of September. The flight of this species is somewhat undulating, and produces a buzzing sound.

We are far better acquainted with the next bird that we shall describe—a most splendid and interesting member of the family of Bullfinches. It inhabits Africa, but frequently makes its way into Central Europe.

THE VINOUS GROSBEAK.

The VINOUS GROSBEAK, or, as it is sometimes called, the DESERT TRUMPETER (*Bucanetes githagineus*), is met with both in Egypt and Nubia, where we have killed many specimens; but for all this we cannot pretend to as intimate an acquaintance with it as Bolle, who has made it the subject of one of his most animated descriptions. We much regret that our space does not admit of its insertion at full length, and we must, therefore, present it to our readers much curtailed, and intermixed with such observations of our own as are likely to add force to his statements. “Far beyond the fruitful coast of North-eastern Africa, and far beyond the Atlas Mountains, we find a new kingdom lying in the desert occupied by few but strange inhabitants. All is not dead and silent in this dreary waste, nor are its waves of sand for ever untouched except by the breath of the death-bearing simoom. It has its wells, where the feet of the caravan have made their path, its little oases, sheltered by the clustering palm, and its valleys rich in brooklets filled with water collected from the winter rains. Within the heart of the Sahara, and not merely on its borders, we occasionally find deep glens planted with the tamarind and mimosa, and the most unlikely places, at certain seasons of the year, produce plants peculiar to the desert. Even in these dreary regions, where vegetation struggles with difficulty through the sun-burnt soil, we need not seek in vain for animal life. This immense expanse, extending, as it does, from the Euphrates to the Senegal, has been branded by nature as an unfruitful wilderness, and all its living inhabitants are formed to harmonise with the desolate plains that they inhabit.” We will not follow Bolle through all his illustrations of the suitability of the creatures found in the desert to the localities in which they are placed, but will proceed at once to his description of the Desert Trumpeter. “The Desert Trumpeter, the ‘STONE BIRD’ of the Arabs, the ‘MOROS’ of the inhabitants of the Canary Islands, is a lively and beautiful bullfinch, of about the size of our canary bird. Its body is compact, and its scarlet beak, owing to its parrot-like shape, appears somewhat thick, but not sufficiently so to interfere with the elegance of its form. The feet are remarkably delicate for a creature that passes so much of its time upon the stony ground. The plumage is comparatively rich, the bridal attire of the old male bird being a mixture of rose-red and satin-like white feathers, the former colour increasing in extent and depth of hue as the bird becomes older; it is darkest in the spring, when the plumage is of a deep rich crimson. These colours, however, become much paler towards the autumn, at which season the tints of the male closely resemble those of the female, whose coat is of a dull yellowish red. Many varieties of shade are seen in this species, some males presenting the appearance of having been dipped in blood, whilst others are of a greyish hue. The red colour is not confined to the plumage, but spreads over the whole body, so that a Desert Trumpeter, when plucked, might properly be termed a little *Red-skin!* During the spring the top of the head and neck are a pale ash-grey, with a brilliant gloss, the shoulders and neck being a brownish ash-grey,

with a reddish tinge produced by the red-coloured borders of the feathers. The large wing-covers are pale brown, edged with bright rose colour, and carmine red on the outer web. The female is of a brownish grey over the whole of the upper part of the body, and on the lower parts light grey marked with red; the belly is of a dirty white." Those who would become acquainted with the home of this species must wander into the desert to which it properly belongs. Bolle found it breeding on the Canary Islands, principally upon the most eastern, namely Lanzarote, Fuerta-ventura, and the Great Canary. We ourselves have met with it all over the greater part of Upper Egypt and Nubia, as far even as the Steppes, where it entirely disappears. We also found it in the desert parts of Arabia. From these regions this bird has been known to reach the Greek Islands, and even Provence and Tuscany. In Malta it may frequently be seen during the winter. The places frequented by the Desert Trumpeter are barren spots exposed to the hottest rays of the sun; it prefers arid and stony places, where scorching heat blazes down upon the burning rock, and seems to luxuriate in glare and dazzling brightness that are perfectly blinding to the traveller upon these treeless wastes. The favourite haunts of the Desert Trumpeter yield but few blades of parched, dry grass, and the stunted shrubs to please its taste must be few and far between. On such a spot it delights to dwell, hopping from stone to stone, or gliding along near the ground on noiseless wings. It is seldom possible to follow the course of this bird to any distance, for the reddish grey of its plumage blends as perfectly with the surrounding stones and leafless shrubs as do the paler tints of the young with the colour of the sand, tufa, or chalk. To this difficulty is added that of the dazzling and deceptive play of light so common in these deserts, which teaches us to appreciate the delightful relief that grass and foliage afford to the weary eye. We should soon lose the object of our pursuit were it not for its voice, which constitutes its most remarkable feature, and will prove our best guide in this search. Hark! a sound like that of a tiny trumpet is ringing through the air; it swells and trembles, and if our ear is acute enough we shall find that this strange clang is precluded or followed by a few light silvery tones, which fall, bell-like, upon the desert silence, much resembling almost inaudible notes struck upon a musical glass by an invisible hand. At other times the sound it produces is extraordinarily deep, and not unlike that made by the tree-frog of the Canary Islands, consisting of a few harsh notes rapidly repeated, and which, strangely enough, are answered by the little creature itself, the second sound being produced by a sort of ventriloquism, and appearing to come from some distance. Few things are more difficult than to attempt to render the note of a bird through the medium of our alphabet, and in this case it would be particularly so, for the voice of the Desert Trumpeter consists of tones entirely different from those to which we are accustomed, and must be heard before it can be imagined. No one would expect to find a singing bird in such localities as those above described, and the fantastic voice of this creature appears well suited to the places it inhabits. The cry mentioned above is often followed by a succession of crowing, rattling sounds, which, like its trumpet-call, seem by their strangeness so completely in unison with the surrounding scenery, that we always stood to listen to them with pleasure, and wished to hear them recommence. In such places as are entirely covered with moving sands the Desert Trumpeter is never met with, as it is not fitted like a Curlew or Courser to run with ease over loose ground; it frequents the barren lava streams upon which not a blade of grass could grow, and in such fissures and holes as these places offer it finds a hiding or resting place, but is never seen upon a shrub or tree. In inhabited districts the Desert Trumpeter is very shy, only seeming to have full confidence when surrounded by silence and solitude; but in its native haunts the young may be often seen perched close beside their parents, and when a traveller approaches them they only acknowledge his presence by staring calmly in his face with their bright little black eyes. These birds may generally be met with all along the rocky shores of the Nile, and from the

valley of that river as far as the desert. In the northern and middle parts of Nubia they alight upon the ground in parties consisting of fifty to sixty, or fly over and about the rocks; indeed, the steeper and more rugged these latter are the more attractive they appear to be.

The food of the Desert Trumpeter consists almost exclusively of different kinds of seeds, with probably a small quantity of leaves or buds. Water is an indispensable requisite. However troubled, scanty, or lukewarm the spring may be, these birds will visit it at least once in the day, so that their appearance is ever a welcome sight to thirsty travellers. They are always seen at the spring, both morning and evening, drinking much and in long draughts, and frequently bathing in shallow water. The breeding season commences in March, at which time the male has donned his gala dress, and, with his chosen mate, has separated himself from the flock; the little couples may very frequently be found perched sociably near the clefts of the rocks, whilst through the air rises the protracted trumpet-like call of the male, and the lark-like note of the female. We saw a pair of these birds upon the banks of the Nile, busily carrying away materials for their nest, but were unable to discover what they consisted of, as the rocks on both sides of the stream offered far too secure a brooding-place to allow us any chance of finding them; we learned, however, from the goat-herds that the Desert Trumpeter builds in the clefts and fissures of the blocks of lava, or under large overhanging stones. The nest, we were told, is artistically constructed of large blades of grass found in the desert, and lined with wool or feathers; in this the three eggs that constitute the brood are laid. It is probable that these birds breed twice in the year, and that they only again join the flocks amongst which their young ones are already numbered, when their parental duties are accomplished. During the autumn and winter they wander to a considerable distance, appearing even in the Canary Isles, and some instances have been known of their falling exhausted upon the deck of ships, that were passing in that neighbourhood. They are never molested by man, and were there no such creatures as Wild Cats and Ichneumons, Falcons or Kites (the latter being very destructive to them in their winter flight through the desert), these remarkable birds might live an undisturbed and happy life. The naturalist may, with care, capture them while drinking, and as many as heart can desire may be obtained from among the stones. It is, however, difficult to take them alive, as a decoy of the same species is indispensable for the purpose. The latter should be fastened in some desert place, or on the borders of a stubble-field, as far from trees or bushes as possible, in such localities as they are known to frequent. The decoy-bird instantly commences uttering its incessant call, and soon attracts large numbers of its wild companions, who alight and hop, as though dancing from one stone to another; they will linger for a moment at a distance, but come near enough to be recognised by their plumage and the brightness of their eyes; next they begin to peck up the food that is strewn about, and a few hours later behold them captives in the net. At first the little prisoners are wild and defiant, but soon become tractable, and eat the canary-seed laid before them. The sport of catching these birds is one that we have fully enjoyed, and may boast our skill in this respect. What could be more exhilarating than an expedition, net in hand, during the early morning, through those boundless plains, when, after a short concealment behind a mass of rock, we emerge to find our labours so richly rewarded? We brought ten Desert Trumpeters with us to Germany, and feel fully entitled to speak as to their qualifications as domestic pets. On their passage home we had a terrible storm, that lasted for many days, and during the whole of that time the birds, in defiance of the cold, continued to pour out their song.

The fact above recorded shows the Moros to be hardy, much-enduring birds, which, though they love to seek shelter in a warm corner, can endure a considerable degree of cold. Even in this severe climate they may be kept in the open air from April to October, although they should not be exposed to frost. Our own are very social, and fond of expressing their confidence by the cheerfulness of

their song—indeed, that of the male may be heard late into the autumn and winter. Unlike other birds kept in a room, they are most lively in the evening; no sooner is the lamp lighted than the little captives begin to trumpet forth their cry. The concerts with which we are entertained at these times are most amusing. The performance begins with their loud and clear trumpet-call, changing gradually into the protracted droning sound that mainly constitutes their song; after which they give utterance to a variety of noises, some of which are not unlike the mewing of a cat. At another time they will commence with light clear notes, resembling those of a little silver bell, and these are succeeded by an entirely different cry, which we might compare to the song of a Bunting. Their quavering call is usually followed by one much deeper and rapidly uttered, and their changes of temper are expressed by various tones, which are poured forth with great point and expression. The Moros are rarely heard to chatter amongst themselves, as do the smaller kinds of parrots, but merely employ a sound not unlike the cackling of a hen three or four times repeated, and their cry when alarmed or surprised is quite peculiar. Should any one attempt to catch them, they quaver forth a piteous sound, so full and expressive that we are astonished that it can be produced by so small a creature. The sound to which we allude is uttered with the head laid back and the beak wide open, while the gentler notes, on the contrary, are produced with the beak closed. During their song, and particularly in the breeding season, these birds accompany themselves with a variety of the most comical movements, dancing about their companions, and chasing each other with great zeal. It is not unusual to see the male bird, with its body erect and outspread wings, looking like the strange figures we employ as armorial bearings.

When caged, the Moros still appear to prefer living upon the ground, over which they hop rather than walk, and here they usually pass the night. They will often conceal themselves, but never creep into holes that have a narrow entrance. When a party of them is engaged in preening and expanding their feathers in the sun, the spectacle they afford is very striking and beautiful. Unfortunately, in captivity their plumage soon loses its magnificent red colour, but, despite its loss, they always present a pleasing appearance. The Desert Trumpeter should be fed, like others of its species, upon seeds, in the choice of which it is far from dainty, though it prefers hemp or millet, and will also eat the green heads of the dandelion, the seeds of which it picks out most dexterously; neither does it refuse ears of corn nor the leaves of some plants, such as lettuce, cabbage, &c.; but it will not eat insects, with the exception of the pupæ of ants. In fact, it is by no means particular as respects diet, and is very easily reared. The Moro will frequently breed in captivity, and with a little care and patience may be completely tamed; it does not require any artificial warmth, for the scorching days and icy cold nights of the Sahara seem to render it indifferent to any change of temperature.

Should the Moro be separated from its species it will seek the society of other birds, and we have known a case in which a Desert Trumpeter mated with a small pigeon (*Columba passerina*) of twice its own size. For the construction of the nest it prefers a cage that is hung up at some height, the bars of which are rather wide apart, and will only build with straw, which they collect by beakfuls at a time, but utterly reject hay or moss as unfit for the purpose. The interior is lined with feathers. The male bird carries some of the materials to the nest, but it is constructed almost entirely by the female. The pair we observed spent some time inside, one entering as the other left, and they appeared occasionally to have considerable difficulty in managing the conveyance of some of the long straws, with which they grappled. Our birds laid their first egg in April, and another was daily added till there were four. The mother, who but rarely left the nest, would probably have sat upon her brood, had we not determined to sacrifice half her stock on the altar of science. The remaining two eggs we placed in the care of a canary that was an excellent sitter, and brought her young charges out

of the shell within a fortnight of their being placed under her. The nestlings were by no means so unsightly as those of singing birds usually are, and were covered with a thick, fine, white down, which formed a sort of crest upon the head; the bare places on the neck, &c., were of a flesh colour. In spite of the care taken of these young birds they died when but a week old, and that without having grown much larger. Our Desert Trumpeters soon proceeded to lay a second supply of eggs, and from the third to the fifth of May were employed in the construction of another nest, which, however, was not completed, as the little couple preferred returning to their old home, after having put it thoroughly into repair. On the ninth of May the first of three eggs was laid, but the female became sickly, and, though we left her in quiet possession of her stock, would not brood, but flew about the room with streaming plumage, as though in search of some remedy that was suggested by her instinct, but unattainable in captivity. During this time the male bird kept faithfully by the side of his little mate, and after her death was inconsolable for many days. The eggs are somewhat large considering the size of the parent bird, and of a light sea-green, or even paler shade, sprinkled over with a few reddish-brown spots or streaks, which sometimes form a kind of wreath round the broadest end. This marking is occasionally varied by delicate streaks, zig-zag lines, or large spots arranged in a somewhat undulating manner, and placed principally over the most uniformly tinted portion of the egg. It is much to be regretted that the excellent capabilities of the Moro have not yet attained for it the place it merits among our domestic pets, and that no European traveller has as yet given particular attention to supplying us with living birds.

The Bullfinches we are next about to describe differ from those already mentioned in the inferior richness of their plumage, which is neither so varied nor so bright in its hues, although beautifully marked. Amongst them we number

THE BULLFINCH.

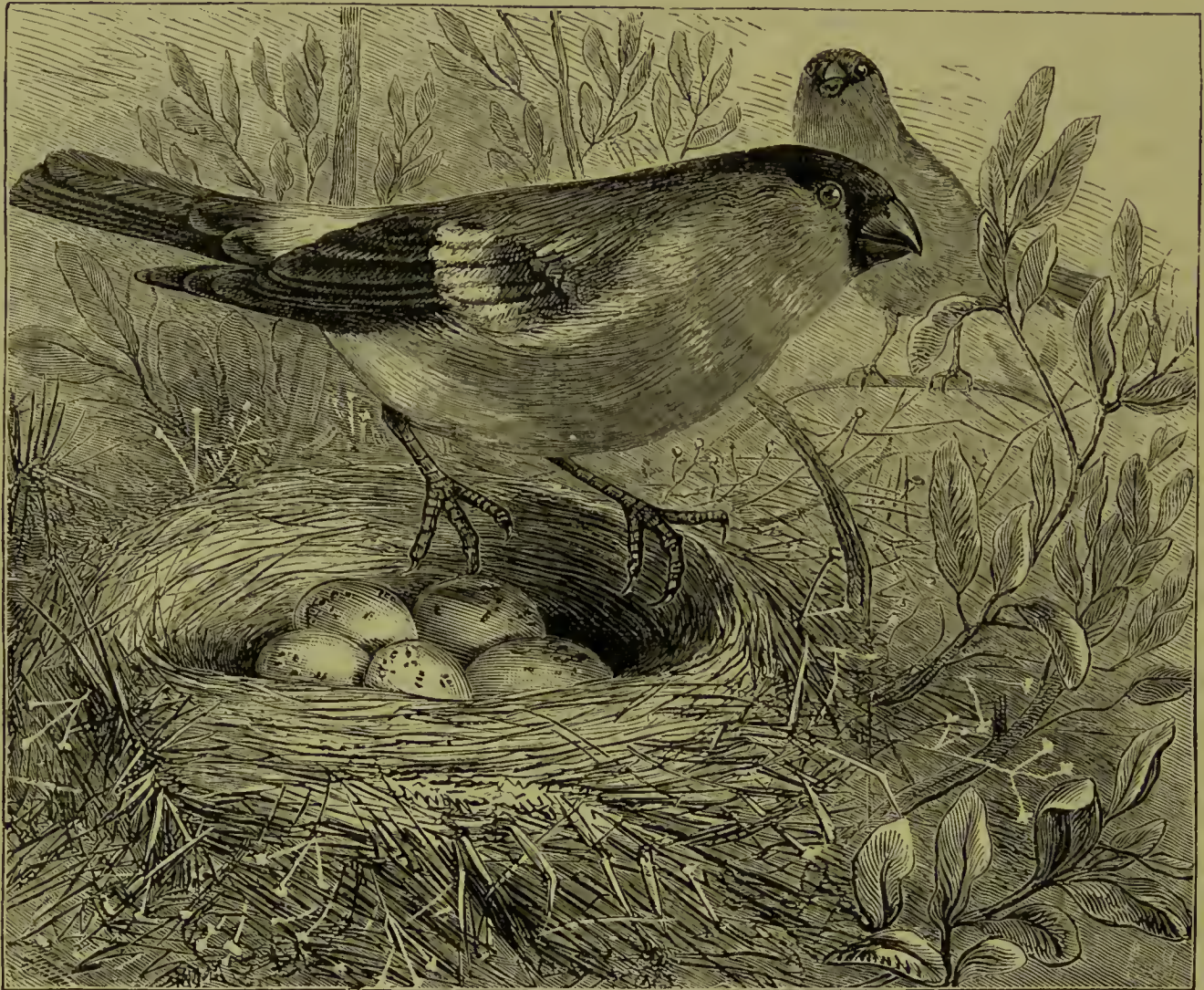
The BULLFINCH (*Pyrrhula vulgaris*) is called also by the names of Blood, Red, Gold, Flame, and Leaf-finch, Red-fighter, Red-bird, and others too numerous to mention, for its titles would really occupy more space than we could afford for their enumeration, many being descriptive of its habits, others derived from the markings and colours of its plumage. This species is from six to seven inches long, and from ten and a half to eleven inches across. The length of the wing is three and a half inches, and the tail measures two and a half inches. The old male is of a rich deep black upon the throat, wings, and tail, and ash-grey upon the back; the rump is white, and the rest of the lower part of the body a bright red. The female differs from the male in the greyish colour of the lower part of the body, and the smaller proportion in which bright tints are found among her feathers. The young ones are without the black mark upon the head. The wing is at all ages striped with two greyish-white bands that run in the direction of the carpal joint. Some varieties are white, black, or speckled. Bullfinches are found throughout all the countries of Europe, though during the winter they usually frequent the most southern parts of the continent, preferring such places as abound in woodlands, and never visiting the more open districts except during their passage to another locality—indeed, these birds never quit the woods except compelled to do so in search of food, and it is only when the snow appears that they leave their shelter to visit the orchards, fields, or gardens of the surrounding villages, and seek such berries and seeds as have escaped the observation of the rest of their feathered relations. For the greater part of the year, these little songsters live in pairs, but during their short excursions they congregate in small flocks, which fly about the neighbourhood on the most amicable terms. At the commencement of their raids upon the country none but male birds are of the party, but these are afterwards joined by the female portion of the community. It is only

under peculiar circumstances that they travel beyond their native land, and are therefore but rarely seen in the south of Spain or Greece. They pass their time in flying from one tree to another, only alighting upon the ground when driven to do so by dire necessity. Their habits are very cheerful, and calculated to render them favourites with all who observe them attentively. One of the most distinguishing characteristics of these creatures is their attachment to each other. Should one of them be killed they cannot endure to leave their companion on the ground, and make every effort to take the body with them. This habit is the more striking when the party consists of only a few birds, and has frequently quite touched our heart. On one occasion in particular, we had shot one of two males that were perched upon a hedge; the other immediately flew away to a considerable distance, but very shortly afterwards we saw it return to the spot upon which its little associate had fallen.

The Bullfinch hops over the ground in a somewhat ungainly manner, but is most adroit in its movements upon trees. Sometimes it will rest upon a branch with its body in a horizontal position and its feet stretched out, and at others will perch bolt upright, or hang head downwards from the twigs. Its long and fleecy feathers are but rarely laid close down upon its sides, thus causing it to seem much larger than it really is. Whilst eating or flying it presents a somewhat more compact appearance, but when in a cage always allows its plumage to droop about its body. A tree full of these birds is a very pretty sight, the red colour on their breasts being seen to great advantage among the green foliage, and in winter their bright plumage contrasts prettily with the snow. The Bullfinch does not exhibit much sensibility to cold, and is lively and cheerful even during our most severe winters, always of course supposing that it can find sufficient food; such powers of endurance are easily explained if we consider the thickness of its feathers, and this density of plumage has considerable influence upon its flight, which is slow and undulating, much resembling that of the Chaffinch, owing to its habit of alternately extending and shutting its wings; it will sometimes hover in the air, and then plunge suddenly with closed pinions upon the selected spot. The call-note is a plaintive cry, employed by both sexes, generally uttered when flying, or about to perch or quit their resting-place, and is capable of a considerable variety of expressions—another proof of the delicate organisation possessed by these interesting birds; for sounds which to our grosser ears appear almost identical, have to them innumerable significations. The song of the male is in no way peculiar, and somewhat harsh; it may be heard almost throughout the entire year. Seeds of trees and grasses constitute the principal food of this species, and it will also devour the kernels of fruit. The seeds of fir and pine trees are obtained by picking them from the ground, as the little creature is unable to rob the cone of its contents, though it can extract the stones from fruit with great dexterity, throwing away the outer part as unfit for food. Its presence upon a tree is often indicated during the winter by the quantities of refuse thus disposed of. Grains of sand are always necessary to this bird, in order to assist digestion; the young are fed principally upon insects. In Europe the Bullfinch makes its nest by preference in such retired spots as are well covered with trees, though it will occasionally settle in parks or large gardens, and we have heard of an instance in which a little pair built in the ivy that surrounded the lodge of a gentleman's seat. The nest is usually placed at no great distance from the earth, either in the forked branch of a low bush, or on the ground, snugly supported against the trunk of a tree; indeed, so invariably do they choose these situations, that their nests have never been found at any considerable height. In its general construction the little dwelling resembles that of the Greenfinch, being formed externally of small portions of fir, birch, or pine twigs, upon which a second layer, composed of fibres from various roots, is placed, and this again is lined with the hair of the deer or horse; sometimes a little wool is mixed with the horsehair. In May, from three to four small, round, smooth eggs are deposited in the

nest; they are of a light green, or greenish-blue colour, covered with pale violet or black spots, and reddish-brown dottings that form streaks or lines. The female sits upon her brood for about a fortnight, and is tended by her mate during that time; both parents combine in the care of their offspring. The nestlings are fed at first upon insects, then with seeds that have been softened in the crop, and afterwards with the same in their natural state. Should there not be a second brood, the young remain for a long time under parental tuition.

Those who wish to rear these birds should take them from the nest while still unfledged, and the sooner their education commences the more profitable it is likely to be. In the woods around



FEMALE BULLFINCH AND NEST.

Thüringen hundreds of young Bullfinches are caught annually, and sent, when properly educated, to the principal capitals of Europe, and even to America. The course of instruction begins from the first day of their capture, and the principal thing that is necessary is that their instructor should be able to whistle the air he is teaching them with great clearness and precision. Persons have tried to teach these little birds to sing with a hand-organ, but with little success, for even the flute cannot produce a sound so delicate as that uttered by the lips of a good whistler. Some Bullfinches can learn to sing two or three tunes without any great difficulty, whilst others never acquire precision. Some will retain a tune during their whole life, and others again forget it entirely during the moulting season. The voice of the female is much inferior to that of her mate. We have often heard the Redpole and the Blackbird pipe extremely well, but these do not approach the Bullfinch in the purity, flexibility, and fulness of its notes. It whistles in such flute-like tones that the listener's ear

is never weary. A friend of ours possessed a bird of this species, which he had reared and trained himself. The cage was hung quite low, so that visitors could approach. When its owner wished it to sing a tune that it had learnt with great exactness, he went to the cage, called his favourite by name, bowed three times, and each time was answered by the bird with great liveliness and joy. After the third salute the little creature commenced its exquisite song, singing it perfectly, and then pausing to receive its master's bow of satisfaction, exhibiting at the same time signs of much delight if praised for its efforts. One circumstance in this performance was remarkable : it would respond to and perform, after receiving the necessary salutes from any *man*, but utterly refused to obey the signs or commands



THE GIRLITZ (*Serinus hortulanus*).

of a lady. A female relation of its owner tried to entrap the bird, by putting on its master's hat before approaching the cage ; but this device was useless, the ungallant little songster proved as obstinate as ever. To such a point of cultivation as this the Bullfinch seldom attains, except taken very early from the nest, and placed where no other sounds are heard until the desired air is acquired, as it can imitate many noises with facility. We ourselves have heard one whose song was compounded of a portion of a tune, the chirp of a sparrow, and the crowing of a cock.

Few birds are to be found so suitable for our drawing-rooms as the Bullfinch ; it shows great attachment to those whom it likes, and is evidently conscious of either reproof or praise. Leury mentions a Bullfinch of his own, that testified great pleasure whenever a poor man out of the neighbouring village where it had lived entered the room, and was quite uneasy if it heard a voice at the door which it knew and recognised ; indeed, we have known instances where these birds have died

in consequence of too much excitement. A lady friend of ours had a Bullfinch so tame that she allowed it to fly about the room, and was in the habit of lavishing caresses upon it. One afternoon, being somewhat busy, her little companion did not receive the customary attention, for which he clamoured so loudly that his mistress at length hastily caught him, replaced him in the cage, and covered it with a cloth; the poor little creature was no sooner treated in this manner than he uttered a few plaintive notes, as though imploring for notice and freedom, and then, hanging his head, fell dead from his perch upon the floor of the cage. An exactly opposite case was related by a gentleman of our acquaintance. The narrator took a journey, and, during his absence, his Bullfinch appeared very mournfully silent; on the master's return, however, the bird was overwhelmed with delight, flapped its wings, and fluttered up and down, bowed its tiny head repeatedly, as it had been taught to do, at the same time pouring forth a song of welcome; suddenly all was silent—the little favourite lay at the bottom of its cage dead with joy. If trained while young, the Bullfinch may be allowed to fly in and out at will, and Leury gives us an interesting example of this fact. During the spring he let a female Bullfinch, that he had had for a year under his care, out into his garden, and for many days afterwards the bird would fly about, returning occasionally to the house, but at last disappeared entirely until the following autumn; when lo! one morning she flew into the sitting-room, as tame as ever. The following year she was again set at liberty, and returned in the month of June with four of her young ones, apparently as confiding as before, and most desirous to persuade the little brood to consider her late master as a friend; but these endeavours proving fruitless, she again left, and in September once more made her appearance with three of her second family. She remained for a short time, and then departed; but positively came back late in the autumn without her little flock to pass the winter in her old home. The following spring she was set at liberty for a third time, and was observed not long after to enter her cage, peck up some of the food it contained, whilst her mate lingered upon a neighbouring tree, and then flew away and was seen no more.

These various little anecdotes will, we think, justify our assertion that the Bullfinch is well worthy of our regard and attention. As to the care it requires, give it a nicely-kept, roomy cage, water to bathe in, and a little rapeseed, and all its wants are satisfied. A small quantity of green-stuff may also be added, and on this fare a little couple of Bullfinches may even be persuaded to undertake the cares of a family.

The capture of this species is attended with no difficulty, as its social habits render it an easy prey. Naumann tells us that any one who can tolerably imitate its call-note may entice it to the spot upon which a snare is awaiting it; indeed, a live decoy-bird is scarcely needed, as a stuffed specimen placed near the traps or limed twigs will answer every purpose, attracting the unsuspecting creatures in great numbers. In our opinion, to shoot a Bullfinch would be a crime; although it is true that it occasionally becomes somewhat troublesome by picking off the buds from the trees, yet, in spite of this, we hope that our readers will allow that its many pleasing qualities make ample amends for any of its troublesome propensities. Besides, in pleading for mercy, we must not forget that its enemies are already sufficiently numerous; martens and weasels, squirrels and dormice, hawks, sparrow-hawks, and falcons, crows and jackdaws, destroy both old and young, and materially limit their increase; many likewise perish during severe winters.

THE GIRLITZ.

The GIRLITZ (*Serinus hortulanus*) may be regarded as the type of a peculiar group of the Bullfinch family, allied on the one hand to the South African or Carmine Bullfinch, and on the other to the Canary, with which we are all familiar. The beak of the Girlitz is very short and small, less spherically vaulted than that of the Bullfinch, and moreover blunt, instead of being sharp-pointed at

the tip ; the legs are short and weak, the wings comparatively long and pointed, the tail graduated, and the prevailing colour of the plumage yellowish or green. The male is a magnificent little creature, of about the size of a Siskin, three or three and three-quarter inches in length and eight in width, the tail measuring two inches, and the wing two and a half inches. The female is a trifling degree smaller. In the male, the fore part of the head, throat, and middle of the breast are of a bright yellowish green, the under part of the body light yellow, while the upper part and the back of the head and neck are of an olive green. The under parts are uniform in shade, but marked at the sides with two large, deep black streaks, the back is dotted with some very faint spots, running from the head to the tail ; over the wings pass two yellow lines, the wing and tail feathers are plain black, edged with a greenish shade. During the autumn the feathers upon the middle of the back and wings are of an olive brown or reddish grey. The female is paler in colour, and more strongly marked than her mate ; the young ones are of a dirty or pale greenish yellow, marked along the body with greyish-yellow streaks.

In Germany the Girlitz is numbered amongst the migratory birds, appearing there about the last day of March or first of April, and remaining until late in the autumn ; indeed, it spreads in a similar manner over the whole of Southern Europe, but in spite of this fact we can scarcely designate its wanderings as true migrations. This bird is particularly numerous in Spain, and is to be met with in all parts of its highlands and lowlands, if we except the country about Castile. In Catalonia it is as commonly met with as is the Sparrow with us ; every garden, every vineyard is enlivened by its presence, it abounds in every grove—even the summits of Montserrat affording it a welcome residence. Some few years ago the Girlitz was unknown in the interior of Germany, and was only found about the south-eastern and south-western portions of that country ; but at the present time it is met with in considerable numbers around Dresden, and we ourselves have captured a little pair in the neighbourhood of Jena. The love of this species for certain districts is quite remarkable. Orchards situated near vegetable gardens form its favourite retreat ; all such places as present these attractions are much frequented, whilst in districts that are deficient in gardens and fruit-trees the Girlitz is but rarely seen. We have observed that it rapidly increases and multiplies in any locality where it settles. According to Hoffmann, this bird does not inhabit the hilly parts around Stuttgart, although often met with in the fields or plains ; while Homeyer tells us that it makes no distinction between high-lying and low-lying districts. The Girlitz is a spruce, brisk, lively little creature, with a moderately good voice, and considerable peculiarity in its habits, particularly during the breeding season. Strangely enough, the male birds are the first to come amongst us, and are afterwards followed by the females. The former, when they begin to arrive, attract attention by their loud notes and careless movements, perching upon the highest trees, raising their tails, and turning themselves in all directions, as they busily pour forth their song ; but should the spring be wet or cold, they keep well under shelter of the trees, and only occasionally steal out to snatch a morsel from the ground, while their notes during such times are faint, few, and far between. As the breeding season approaches the song of the little strangers becomes more animated, and their gestures more extraordinary. The male, not content with exhausting itself to please its mate with its voice, stretches itself like a cuckoo upon the branches, erects the feathers upon its throat, spreads its tail as it balances and turns its body in all directions, then rises suddenly into the air, fluttering in a most curious manner, with somewhat of the motion of the bat ; it next settles upon the tree, throwing itself from one side to the other, after which it will return to its first perch, and recommence its song. Should another male appear, nothing can exceed the rage of the jealous occupant, who pursues the intruder from one tree to another with furious indignation, and only leaves him after having inflicted a considerable amount of very severe chastisement for the liberty he has taken. The song of this species

is somewhat peculiar, though we cannot exactly say that its tones are musical, being rather monotonous and shrill, yet still, to our mind, far from unpleasing. The nest, which may really be called a work of art, is formed of the fine roots of plants or blades of grass, and bits of hay. The interior is lined very delicately with hair or feathers, and the little structure is generally buried in the thick foliage of a tree or shrub. According to Hoffmann, pear-trees are preferred, but it will build upon apple, cherry, and, we believe, pine trees, while in Spain it is most fond of settling upon the boughs of the orange and citron. The brood consists of from four to five small, blunt-shaped eggs, of a dirty-white or greenish colour, marked principally at the broadest end with pale brown, red, reddish-grey, or purplish-black spots, dots, or streaks. In Spain we have found newly-laid eggs from April to July. It is probable that these birds breed twice in the year.

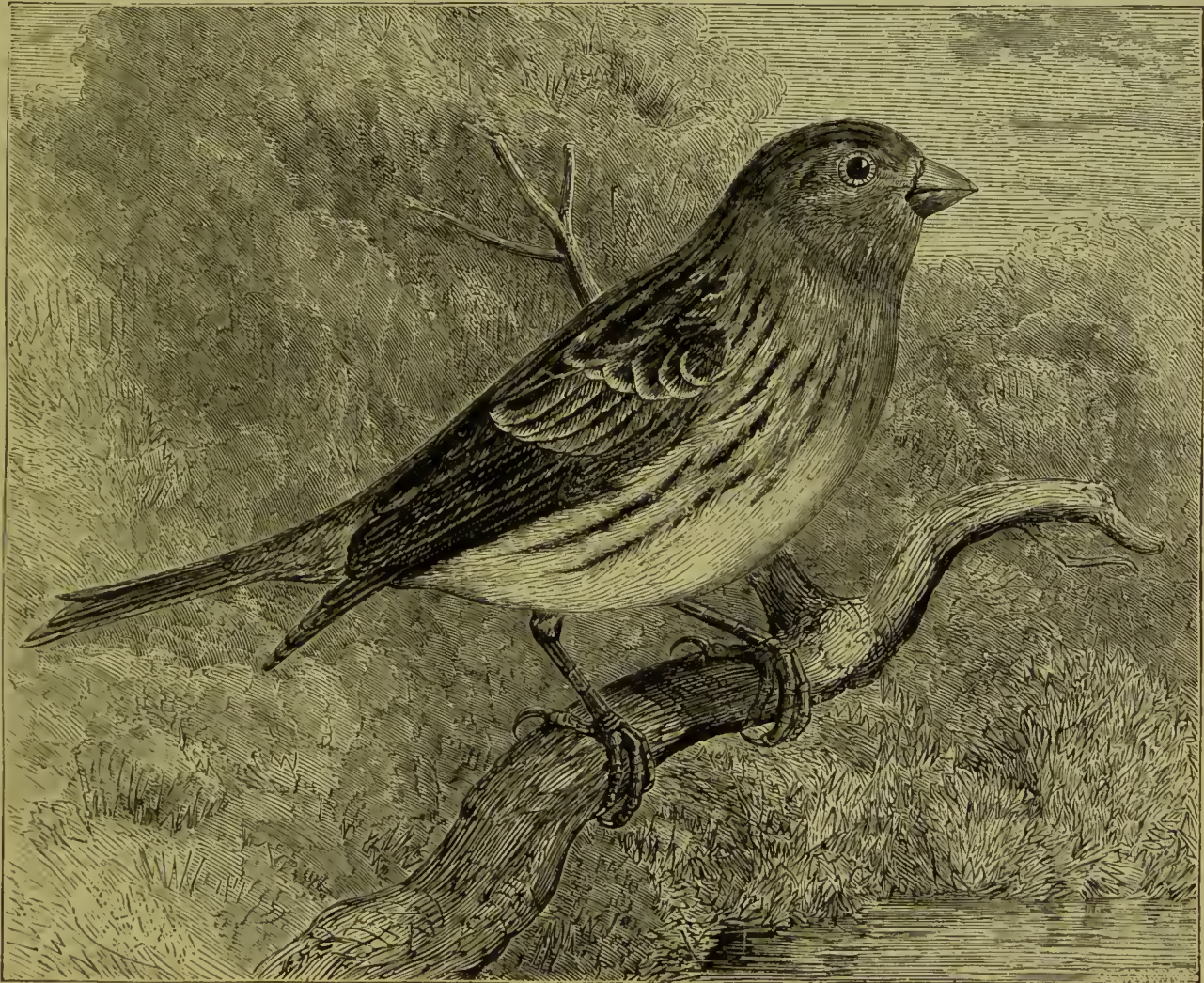
The nest of the Girlitz is not always very easily to be found, but if sought for carefully its situation will be betrayed by the female; the latter is fed by her mate during the whole period of incubation, and when hungry expresses her wants by calling to her little companion, so that any one wishing to discover their retreat needs only to stand under the tree and watch for the return of the male bird. The mother is very faithful to her little charges, and sits for about ten days upon her eggs. As soon as the young leave the shell they also call for food with a chirping kind of sound, and soon becoming weary of the nest, frequently leave it before they are really strong enough to do so. The parents feed them for a considerable time, and will even bring them food if they are confined in a cage placed near the tree—indeed, the latter is a very convenient plan by which to secure proper nourishment for the little prisoners until they have attained their full strength. The Girlitz feeds chiefly on all kinds of seeds, and may be kept when tame upon rapeseed, poppy-seed, or millet; water is indispensable. These birds are well adapted for a cage, and are very social. In Spain, when the breeding season is over, they assemble in large flocks at the commencement of autumn, and during such times associate in some degree with Goldfinches, Sparrows, and Fieldfinches. They are eagerly pursued by most of the smaller birds and beasts of prey, and the young not unfrequently fall victims to these marauders. They are caught by the Spaniards in great numbers and brought to market, where they are purchased both for the cage and the kitchen. In Germany the Girlitz is but little molested. In Spain it is trapped by means of the “esparto,” a long, rush-like kind of grass that grows in great abundance on the Spanish plains. The blades of this grass, smeared with bird-lime, are placed in considerable quantities on the tops of the trees, their summits being thus converted into one large trap. The numbers so caught are most astonishing, for it will often happen that not one-fourth part of a large flock escapes in safety from the treacherous branches, even birds of considerable size being sometimes taken in this manner.

THE CANARY.

The CANARY (*Dryospiza Canaria*). Three centuries have elapsed since the CANARY-BIRD first left its native isles to become a citizen of the world, and now who could recognise in our beautiful golden little favourite the wild green species from which it is descended? The change reminds us of the difference sometimes observable between two brothers, one of whom has experienced all the advantages of society and cultivation, while the other has remained in his rustic but perhaps happier position. It is to Bolle we are indebted for the first reliable history of the Canary in its wild state, as until his time we were only acquainted with the tamed species. The writers of former times have given us many examples of this bird, but their accounts have bordered somewhat upon the marvellous. They were even mistaken as to its original haunts. The naturalists of the last century were somewhat better informed, but even Buffon has assisted in the spread of erroneous ideas concerning its history. “Goldfinches and Citronfinches,” says Bolle, “must be contented to descend from the position they have hitherto occupied as supposed progenitors of the Canary. Buffon tells us that the

Canary belongs to the same species as the two above-mentioned birds, and has only changed in colour from difference of climate. Humboldt was the first who could speak with any authority as having seen the Canary in its wild state, having become acquainted with it in 1799, during his residence in Teneriffe." More modern ornithologists have been far from giving this bird the praise it deserves, and we have to thank Bolle alone for so beautiful and exhaustive a description of its life and habits, that nothing more remains to be desired. The following account is drawn from his work.

The writer we quote found this species occupying the seven wooded islands called the Canaries, and even some parts of Madeira, the latter fact leading him to suppose that this bird may have lived upon all these islands before their trees were cut down. It is principally to be met with in such



THE WILD CANARY.

places as are covered with wood or shrubs, and are situated near springs of water in the interior, which in summer form brooks, margined during the entire year by a border of delicate plants; it is also found in the gardens and houses of the inhabitants, and is quite as numerous in crowded towns as in the quietest nooks—indeed, it is seen in all parts, even at an altitude of 5,000 or 6,000 feet above the level of the sea, except in the thick damp forests formed by laurel and holly trees, beyond the borders of which Bolle never observed it to settle. It may be also frequently met with in the vineyards, or in fir plantations that cover rocky declivities. It is at present uncertain whether this bird occupies the high ground during the winter, but it has been found at an altitude of 4,000 feet late in the autumn. The wild Canary, which, even in its native woods, is called "Canario" both by the Spaniards and Portuguese, is considerably smaller, and usually more slender than these we see

tamed in Europe. Those, on the contrary, which are kept in a state of captivity in the Canary Islands have completely retained their original dimensions by mating with birds newly taken from their wild state. The adult male wild Canary is greenish yellow upon the back, with blackish streaks upon the shafts of the feathers, which are so broadly bordered with bright ashy grey, that the latter might almost be described as the principal colour. The hinder part of the body is yellowish green, the upper tail-covers excepted, which are green, edged with ash-grey; the head and neck feathers are yellowish green with narrow grey borders; the forehead and two long stripes which run in a circular form over the eyes to the neck are of a greenish-gold colour, and the throat, upper part of the breast, and sides of the neck are, on the contrary, of an ash-grey. The lower portion of the breast is of a paler yellowish tint, the belly and under tail-covers whitish, the shoulders a beautiful siskin-green, bordered with pale black and green, the blackish wing quill-feathers are edged with green, and the blackish-grey tail-feathers sprinkled with white; the eyes are brown, the beak and feet a brownish flesh colour.

Bolle is of opinion that the plumage above described is only acquired at the end of the second year. The female is brownish grey upon the back, with broad black lines along the shafts of the feathers; the neck and top of the head are similarly coloured, but the ground colour of the feathers is green. The cheek-stripes are grey, the forehead green, and the cheeks partly greenish yellow and partly a blueish ash-grey. The neck is encircled by a line that is yellowish green in front, merging into blueish ash-grey at the back; this ring, however, is not very distinct. The shoulders and small upper wing-feathers are a light yellowish green, the whitish-grey borders of which are broader, but not so beautiful as in those of the old male bird. The lower part of the breast and belly are white, and the feathers at the sides of the body brown, with dark lines at the shafts. The plumage of the young birds is brownish, shading into yellow upon the breast, with a few touches of lemon-yellow upon the cheeks and throat. The colours are extremely difficult to describe, owing to the delicacy with which the different shades are blended, and we may therefore add that the plumage is almost the same as that with which we are familiar in what we call our tame green or grey Canaries.

The food of these birds consists principally of green herbs, small seeds, and delicate juicy fruits—a ripe fig, for instance, with its soft, juicy flesh and small kernels, is eagerly sought for and enjoyed, as soon as the too ripe fruit has burst its violet or yellowish-green mantle, for until this happy time arrives their small and delicate beak is quite powerless to penetrate the distended skin. A fig-tree, when its fruit has reached this point of ripeness, is indeed a beautiful sight for those who have been fortunate enough to see it literally covered by the various singing birds that are tempted to rob its branches. Blackbirds, greenfinches, tom-tits, and many others come in variegated confusion to share the dainty in common with our friend the Canary. Water is essential to its welfare, as it drinks much, and is fond of bathing very frequently. These birds pair and begin to construct their nest about the end of March, never, as far as we have been able to ascertain, fixing upon a spot that is less than eight feet from the ground, preferring trees with slender stems, either evergreens or such as don their foliage early in the spring. Amongst their favourite trees pears and pomegranates hold the first place. The orange-tree is not often selected, on account of its bushy crown, and the fig-tree is never employed for this purpose. The nest is always built in a retired spot, but is easily discovered on account of the constant coming and going of the male bird. The first that we saw was found towards the end of March, in a deserted garden of Villa Arotava, upon a box-tree about twelve feet in height, that stood above a myrtle hedge. The nest merely rested upon the tree, being built between the forked portions of a branch, and was beautifully constructed. It was broad at the base, and very narrow at the top, with a tiny little entrance. The walls were formed throughout of snow-white wool, woven together with a few blades of grass. The first egg was laid upon the first of March, and one was added daily

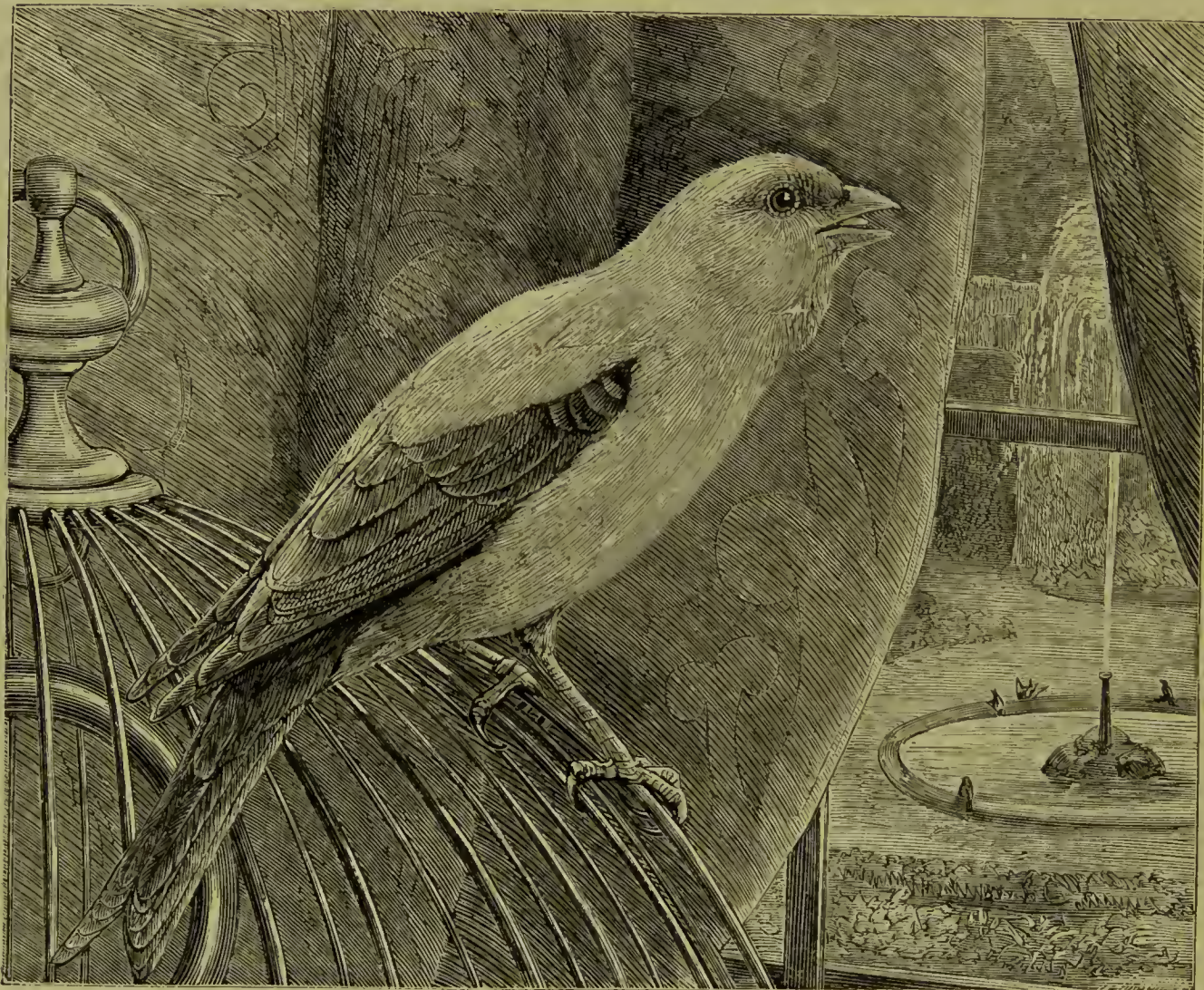
till there were five in all, this appearing to be the usual number of a brood, though from time to time we have found but three or four in a nest. The eggs are of a pale sea-green, spotted with reddish brown, but are sometimes of a uniform colour; they exactly resemble those of the tame bird, and the time during which the female sits upon them is the same in both cases. The young remain in the nest until fully fledged, and for some time after are tended by both parents, and fed from the crop with great care. The Canary breeds usually four times in the year, but occasionally only three times. In July the moulting season commences, after which no more eggs are laid.

During the period of incubation the male bird perches upon a tree near his mate, and from thence delights her with his song of encouragement and sympathy. It is a real pleasure to listen to this pretty songster, as it inflates its throat and pours forth its lay, turning, as it sings, from one side to another, as though to bathe its glowing breast in the flood of bright sunlight. All at once it hears the call of its little companion, and darts with responsive tenderness to perch at her side—indeed, in our opinion this modestly-attired bird, as it sits surrounded by all the varied and delicious blossoms of its native trees, is a far more attractive spectacle than its more brightly-coloured and elegant brother, with whose appearance in captivity we are all so familiar. We do not deny that the beauty of the objects that surrounded these Canaries had much to do with the admiration with which they inspired us, and many a time they have caused us for a moment to forget that we were sojourning in a strange land, their song exactly recalling the voices of the warblers we had heard at home. Much has been said, and very varied opinions expressed as to the relative merits of the song of these birds when free or in captivity, and for our part we consider that such as have been tamed in no way surpass their brethren of the woods, either in skill or beauty of tone. Whatever trifling modifications may be noticed, either as regards greater purity of sound or more artistic performance, the song is unchanged, and proves that though the language of a country may be entirely lost, yet the notes of these feathered songsters remain ever the same. We fully admit that our tame Canaries are at a great disadvantage when compared with their brothers of the groves, for that which sounds delightful in a dusty room, gains unquestionably a thousandfold by being heard in a spot where the singer has God's heaven above him, and masses of roses and jessamine at his feet. We would, however, by no means lead the reader to suppose that all wild Canaries are equally gifted; with them, as with all other singing birds, many degrees of skill and beauty may be observed, and some we have heard would well stand the test of comparing their notes with the heart-stirring tones of the nightingale. The flight of the Canary resembles that of the linnnet, being somewhat undulating. In their passage from tree to tree, the various members of a party fly at some little distance from each other, uttering their call-note whilst on the wing. In the breeding season these birds live in pairs, but during the rest of the year they associate in very large flocks, often, however, dividing into smaller parties, and passing most of their time upon a chosen spot, spending a considerable portion of the day upon the ground, and re-assembling after sunset to pass the night perched in the branches of their favourite trees.

The capture of these birds is, owing to their great sociability, unattended with any difficulty, and even nestlings will run at the call of a decoy. In the Canary Islands we have seen linnnets or goldfinches employed for this purpose with success. The snaring of this species should be carried on very early in the morning, in such spots as are well watered and rich in fine trees. On these occasions we have always found much interest in observing, from some place of concealment, the various movements and lively gestures of the unwary little victims as they run to meet their fate, and have ourselves seen from sixteen to twenty birds caught during a few hours; of these the unfledged young formed the larger proportion. The Canary is a restless creature, and must pass some time in captivity before it can be taught to lay aside its wild habits. The birds we have kept began to moult at the latter end of August, and some of them had not entirely resumed their plumage by the month of December. These

latter we imagined to be the youngest members of the party, and the yellow colour in all cases was first visible upon their breasts.

As regards the habits of the Canary when tamed, we quote Lenz, a naturalist well qualified to furnish all the particulars that could possibly be desired:—"In order to ascertain where the finest specimens could be obtained, I sought throughout the whole of Germany and its surrounding countries, not omitting to place myself in correspondence with various distant portions of the world, and am now fully persuaded that the choicest birds are to be procured at Andreasdorf, in the Hartz Mountains, and the neighbouring villages. In the above-mentioned place almost every house



THE TAME CANARY.

has its breeding-room set apart for their cultivation. Many families live entirely by this means, and we were told by an official belonging to the place that Canaries are sold to the value of 12,000 rix-dollars during the course of the year from this village alone. It is quite unknown when this business was first established in the Hartz Mountains, but that locality affords in plenty three great requisites for its success: wood in such profusion that the cost of warming the Canaries' apartments throughout the year is very trifling, abundance of rapeseed, and white bread, the corn for which is grown with ease in the beautiful meadows that surround the villages. The songs of the birds reared on this spot are very various, but in no case have we heard a really bad singer, while many possess voices of unusual power and sweetness."

In Andreasdorf a bird of uniform pale yellow plumage, and without a crest, is much preferred, because those that are uniformly tinted cannot be spoilt by irregular markings, and because the male

nestling of this species is easily recognised on account of its tints about the eyes and region of the beak ; even after the young have left the nest this distinguishing feature is for some time observable, and the sexes may be thus readily ascertained. The superfluous female birds are sent early in the summer upon their travels through the world in the care of an itinerant salesman, and hundreds of the males are taken in October and November to be sold by wholesale dealers in large cities, or exported to Russia and America. The Canaries reared in other neighbouring districts cannot equal those of Andreasdorf in their song, though they are very superior to such as are obtained elsewhere. The following hints may perhaps be useful to our readers in the choice of a tame specimen :—First, entirely green birds, or such as are brightly marked with green, are usually very strong, and, in consequence, their voice is often disagreeably loud ; secondly, such as are of a yellowish brown or dark yellow are weakly, and seldom breed ; thirdly, the variegated kinds do not often have prettily-marked young ; fourthly, such as have red eyes are weak ; and, fifthly, should birds with a crest be preferred, the purchaser must be careful that there are no bare spots on it. In order to ensure a good singing Canary, it is necessary to procure such as have parents gifted in that respect, and during the course of instruction the bird should not be allowed to hear the song of finches, larks, and nightingales, as the notes which it would thus acquire would be unnatural, and therefore soon forgotten. In Andreasdorf the people are most careful only to allow the young to copy the notes of such male singers as are experts in the art, as should the little pupil, even when four years of age, hear a bad singer it is pretty sure to imitate all its faults, and even in old age will sometimes retain this tiresome trick. The Canary will learn tunes played upon an organ with little difficulty, but after a time often perform them inaccurately. We have tried the experiment of placing the pupil with two old males, and have always found it prefer to imitate the bird whose song gives it the least trouble, and thus it acquires shakes and trilling notes with much greater ease than the flute-like tones, or deep rolling song of the nightingale. A Canary belonging to an artist residing at Bordeaux, possesses the remarkable faculty of singing whenever it feels disposed with the beak closely shut, producing its song, which is very clear, apparently from the top of its throat, and giving the effect, as in ventriloquism, of a voice proceeding, not from its owner, but from some distance.

The cage of a bird under tuition must be placed in such a position that it can be constantly visited and instructed, and at such a distance from the window as will prevent its being disturbed, in which case it is liable to become irritated, and learn to scream or sing in a very disjointed manner. The diet should consist entirely of rapeseed and white bread steeped in water, so that the food being simple, the pupil may not be distracted from its song by the daintiness of its fare. Green-stuff or fruit should not be given to it, as producing the same result. The wires of the cage should be so close together that the bird cannot stretch its neck between them and look around, and should it appear inclined to try to peck at such things as bits of paper, thread, &c., these should be removed and four oats given to it daily, thus affording exercise for its beak. If the Canary has been always in the habit of living alone it should not be allowed to see another of its kind, or it will immediately begin to scream instead of singing gently ; but if more convenient to place it with other males, the cages should be hung close together so as to enable them to be constantly aware of each other's presence. When a young bird has been trained in this manner for two years, it may be considered to have learnt all that it is capable of acquiring. As regards the cage, great care should be taken that it has no brass or paint about it ; the floor should be strewed with sand, and the bird furnished with some atoms of clay or crushed egg or snail shells. The perches are best when made from the wood of the lime-tree. Great precautions are necessary to prevent the entrance of vermin into the cage, and should they be detected both cage and bird must immediately be washed with linseed or rapeseed oil. Except during the breeding season, the females may all be kept together in a large cage, that is, if they will live in

peace, which is not always the case. The place in which the cage hangs ought to be kept tolerably warm, but should the bird be exposed to a hot sun a screen should be provided. In winter the females may be kept without injury in a room in which the temperature is below freezing-point, but the male under such circumstances refuses to sing; many experiments have proved to us that these birds can endure extreme cold if only well fed, and provided with snow to drink instead of water. Canaries should be screened from draughts. Some perfumes are very injurious to them; one evening we placed a blooming *Orchis bifolia* in a room occupied by three of these delicate creatures, and in the morning found the two females dead, and the male so overcome that he was only saved by prompt attention. The use of the common kind of lamp-oil blackens the feathers, but does not in other respects injure the bird. As to the most suitable food, we can only refer to the treatment adopted by the inhabitants of Andreasdorf, of which we gave a detailed account in a previous page. The average age attained by the Canary in Malaga is sixteen years, but we have heard of cases where by great attention they have lived to the age of twenty. The number of eggs laid by this species is large, and one reared by us produced as many as twenty-nine within the year; the eggs are white, and dotted with red at the broad end. The female broods from about thirteen to fifteen days; the young birds quit the nest soon after leaving the egg, and feed themselves within a week of that time. Before a month has passed the feathers, with the exception of those on the tail and wings, begin to moult, and the change is not completed for some months. By the ensuing moulting season the young birds have commenced singing, and the males are then easily recognised by the fluency of their song, the notes of the young female being quite unconnected. Should it be desired to render a favourite very tame, no food should be given in the cage, the bird being thus compelled to take all from the hand. The Canary is well known to be a most docile pupil, and will learn to exhibit its skill by spelling words that are repeated to it, selecting the letters in proper order from an alphabet laid before it; will find the required pieces of cloth from amongst several others; and has been taught to add up, multiply, or divide figures by the assistance of numbers given it to choose from. Others will sing when commanded, pretend to fall dead when a pistol is fired, then allow themselves to be laid on a little car to be carried to the grave by two other canaries, and when the journey is accomplished will jump up and sing a lively song. All these tricks are taught as with dogs or horses, by keeping them without food until the order has been obeyed.

THE FINCHES (*Fringillæ*).

THE birds belonging to this group are distinguished by an elongated, round, and somewhat blunt beak, a tarsus of moderate height, narrow and somewhat pointed wings, and a long and rather excised tail; the body is elongated and straight, the plumage compact, and in the male bird of bright colours, which vary considerably according to the time of year. The female is not so handsome as her mate, and the young, after the first moulting, resemble their mother. Finches are found all over Europe, in forests and plantations, or in rocky places covered with a growth of trees and underwood. They are very sociable, but by no means peaceful in their habits, as, though they associate freely with other birds, they are seldom long in their company before quarrelling commences. Seeds of plants and insects constitute their principal food; the young are generally fed with insects. All the males of this family are busy creatures, some of them much valued on account of their vocal powers, and the little injury they do is fully compensated by their many services, among which their song should take the first place. These birds are considered, especially in Germany, as migratory, being much addicted to long flights, although some are known to remain in the same country during the whole winter. They usually make their appearance amongst us early in the year, and build elegant and artistic nests, breeding from

once to three times in the summer, after which they assemble in large flocks, fly from place to place, and then depart simultaneously for warmer regions. The favour in which they are held by many is very easily understood if we consider their really great gifts, sweet song, and the facility with which they are tamed. They have been the companions of man from the most ancient times, and in some places are as much valued as the Nightingale. In certain parts of Germany the Chaffinch is an actual member of the household, and quite indispensable to the family circle.

THE CHAFFINCH.

The CHAFFINCH (*Fringilla cœlebs*), or as the Germans call it the NOBLE FINCH (*Edelfink*), is by this very name at once placed first amongst its brotherhood, and is so common amongst us that it can rarely be mistaken for any other bird. Its length is six inches, its breadth across the wings seven inches, the female being somewhat smaller and longer than her mate. The plumage is strikingly coloured, and beautifully marked. The male is deep black upon the forehead, the head and neck ash-grey, the back brown, the lower part of the body (except the belly, which is white) of a rich red, and the wings striped in two places with white. The female and young birds are often of an olive-greyish brown, grey below, and the wings marked as in the male bird. The beak in the young is of a dusky light blue, in autumn reddish white, and always black at the tip; the foot is of a reddish grey, or dirty flesh colour, the eye brown.

The Chaffinch is found over the whole of Europe, if we except its most northern and southern countries; it appears in Spain only during the winter, and in the north is replaced by a species called the Mountain Finch. In Siberia it is as common as it is in Germany, and in Northern Africa a very similar bird is to be met with. The Chaffinch inhabits all kind of woods, frequenting the larger forests as readily as clumps of trees, plantations, and gardens, only avoiding marshy or boggy ground. One little couple lives close to another, but each bird defends its own chosen spot with great fury, and wages constant war against intrusion. After the breeding season is over these separate couples assemble, and form large flocks—which often include several other species of birds—and then start upon their exploring travels through the length and breadth of the land. At these times they do not appear more peaceably disposed than before, and quarrels and strife go on unremittingly. In Germany the Chaffinch is a summer bird, and though some few males may winter there, the mass of these lovers of sunshine leave for a warmer climate.

As they begin to assemble at the commencement of September, in October the flocks are ready for flight, and before the end of that month have entirely disappeared, to take up their winter quarters in Southern Europe, or North-western Africa, and some few in Egypt: spreading over mountains, valleys, fields, and gardens, everywhere numerous, and everywhere living, not in pairs, but socially; thus showing that these regions are not regarded as their home, but merely as a temporary abiding-place. When the spring commences they return to their old haunts, generally performing the journey in much smaller parties than when they took their departure—the males first, followed in about a fortnight by the females. It is very rarely indeed that both sexes return together. In fine weather the males generally make their appearance about the beginning of February, the principal parties arriving about March, the stragglers often not till April. Then may be heard their fresh cheerful voices, as they seek their old breeding places and choose their mates; as soon as this is done the building of the nest commences, and the little cradles for the young are generally ready before the trees are covered with leaves.

The process of making a nest is commenced by a search amongst the branches; a proceeding in which both birds take an active part, the female, perhaps, looking for what is required with the greatest earnestness, her mate, on the contrary, thinking more of his attachment to her, and his deter-

mination to keep off all rivals ; for in their case, as sometimes happens with their betters, love and jealousy go hand in hand. At length a suitable spot for building is found upon a forked or gnarled branch, or sometimes even in the thatch of a house. The nest itself is most beautifully made, being as round as a ball, and open at the top. The thick outer wall is formed of green moss, delicate roots and blades of grass, and these materials are covered externally with bits selected from the tree itself, woven together by means of the webs of various insects, so that the nest might easily be mistaken



THE CHAFFINCH (*Fringilla Caelcis*).

for a part of the branch on which it is placed ; indeed, even a naturalist would have the greatest difficulty in finding it, and the uninitiated could only discover it by chance. The interior is round, deep, and snugly lined with a bed of hair, feathers, and fibres of wool or cotton. Whilst the nest is being built, and during the time the female broods, her mate pours out an uninterrupted flow of song, and every other male responds to his notes with great zeal, for these little creatures are not only actuated by jealousy, but by ambition. Chaffinches, like other singing birds, strive to vie with each other in their performance ; but the rivals soon become so excited in their efforts that their voices fail, and they are compelled to give vent to their rage by chasing each other through the branches, until at

last, literally seizing each other by the throat, and thus powerless to fly, they whirl round and fall upon the ground. In these battles the combatants seem blind and deaf to every danger, and risk their lives in their endeavours to vent their fury. As soon as the battle with the beak and claws is concluded, the musical strife is renewed, to be again terminated by a fresh onslaught of the furious and implacable little rivals. The breeding time of these birds may be described as one uninterrupted series of contests, for every male in the neighbourhood thinks it his duty to worry and rival his neighbour.

The eggs, five or six in number, have very fragile shells of a delicate blueish-green colour, varied with pale reddish-brown markings, and blackish-brown spots of various sizes and shapes. The female sits for about a fortnight, and is relieved by her mate during such time as she requires to go in search of food. The nestlings are fed by both parents exclusively upon insects, and require to be supplied with nourishment for some time after leaving the nest; when first hatched they have a peculiar kind of cry, but soon employ the same call as the old birds. These latter have scarcely parted from one brood than they commence preparations for a second, seeking another place for a nest, and building again, but with less care than before, the female laying only from three to four eggs. With the rearing of this second brood the duties of incubation are for the year at an end.

Chaffinches are much attached to their young, and utter loud cries at the approach of an enemy, accompanying their screams by most significant actions. Naumann tells us that the male bird concerns himself more about the eggs, while the female gives her affection principally to the nestlings. We ourselves have not observed this difference. With respect to the tenderness shown to their offspring, this species differs much from other Finches, for if young Linnets, for instance, are taken out of the nest and placed in a cage, one may rest assured that the parents will continue to feed them, whilst Chaffinches, on the contrary, would allow their young to starve, as many of their admirers have learned by bitter experience. Exceptions to this rule are sometimes found, but among the last-mentioned birds care for their own safety is generally stronger than parental love. The Chaffinch is a cheerful little creature, and passes the greater part of the day in action, only reposing from its fatigues during the noontide heat. Its movements are much more agile than those of the Bullfinch, and of an entirely different character. On the branches it sits perched-bolt upright, and seems to balance its body as it moves upon the ground, with a kind of step that is half hopping, half running. When on the twigs it prefers progressing in a sidelong direction, and flies very rapidly with an undulating sort of course, spreading its wings slightly before perching. The call-note of "pink" or "finch" is uttered with great diversity of sound and expression, and its song possesses a variety and beauty that has earned the admiration of all who have heard it. To the uninitiated the changes in these sounds are scarcely noticeable, but those who rear and study these birds have arrived at so great perfection in their observations that they can give the proper interpretation to their various notes. Lenz even tells us of nineteen (so-called) different expressions, but to enumerate them would be to weary our readers. In former times the passion for these birds was so strong that men have been known to exchange a *cow* for a Chaffinch, and though, at the present day, this mania has diminished in force, it has by no means died out. In Belgium we hear of bets being laid about the singing of pet birds. On the occasion of such trials of skill, the competitors in their cages are placed in rows upon the table, and the conflict continues for an hour. Certain men undertake to mark down how often each individual utters its notes, and the one that "trills" the oftenest is considered to have gained the prize. Instances have been known of Finches uttering the required sound 700 times within the hour. Chaffinches are well fitted for life in a cage; but there is a strange idea afloat that they must be blinded before they will sing well, and in many parts of Belgium this horrible practice is constantly carried out; many are captured, particularly in the breeding season, at which time they often

recklessly expose their lives and liberty; all that is needful is to place a decoy in a snare, and its brethren will hasten in numbers to the trap, their angry little passions hurrying them to their destruction, for when the decoy is properly posted, the wild birds come down for the express purpose of engaging it in a fight, and thus rendering themselves an easy prey, are caught by means of lined twigs. Chaffinches are never injurious, and often very useful to man, as they destroy a great quantity of seeds—chiefly those of various weeds—whilst the numbers of insects consumed by their little bills render them real benefactors to the woods and gardens.

THE MOUNTAIN FINCH.

The MOUNTAIN FINCH (*Fringilla montifringilla*) is a species known by a great variety of names. Its length is about six and a half to seven inches, its breadth ten and a half to eleven inches. The plumage of the male bird during the breeding season is of a brilliant deep black, and on the fore part of the neck and shoulders of an orange colour; the under parts of the body and breast are white, the sides black; in the female bird the latter are marked with long pale black streaks, while over the wings run two white lines; the under wing-covers are brimstone yellow. The female is brownish-black upon the head, neck, and back; the under parts of the body are of a sober, dull shade. After the moulting season the beautiful bright hues of these birds are hidden by the light yellowish-brown edges of the feathers. Countries beyond 65° north latitude may be considered as the homes of the Mountain Finch, it being by no means rare in Lapland, and very numerous in Finland; how far east it may be found we are at present ignorant. From these northern regions it emerges during the winter, covering the whole of Europe as far as Greece and Spain, and Asia even to the Himalaya Mountains, forming large flocks during the month of August, and then coming gradually farther and farther south. It reaches Germany in September, and Spain somewhat later, the latter country, indeed, being never visited so regularly as Germany. Mountains and large close forests are the favourite resorts of these birds, and decide their course, always supposing that their intended route is not disturbed by meeting with flocks of other kinds of finches, to whom they are very ready to unite themselves—indeed, the Mountain Finch is generally seen in company with Chaffinches, Linnets, Yellowhammers, Field Sparrows, and Goldfinches, a group of trees being usually chosen as the gathering-place of this very varied company, and the nearest wood affording them their sleeping quarters. Should a heavy fall of snow occur, they are compelled to remove to another place in search of food; their migrations are, therefore, dependent upon the suitability of the spot, and in nowise regular or premeditated. The Mountain Finch very much resembles the Chaffinch, and like it, is quarrelsome and violent, in spite of its apparently social disposition, equalling the bird we have just mentioned in its activity, but far inferior in the quality of its song, which, indeed, we can only describe as a plaintive little chirp.

The Mountain Finch is usually, but unjustly, considered to be stupid, because, like most other northern birds, it exhibits boldness and confidence when it first reaches us, it however soon loses these qualities and becomes cunning and shy. Though much to be admired on account of the beauty of its plumage, its many disagreeable qualities, and quavering, weak voice, prevent it from being regarded as suitable for domestication. The food of this species consists principally of seeds from various plants and trees; in summer they devour great quantities of flies and insects, and can live for many years upon rapeseed, and other simple diet. The nest and eggs bear a most deceptive resemblance to those of the Chaffinch. The Mountain Finch is sought for on account of its well-flavoured though somewhat bitter flesh, and is caught in great numbers.

THE SNOW FINCH.

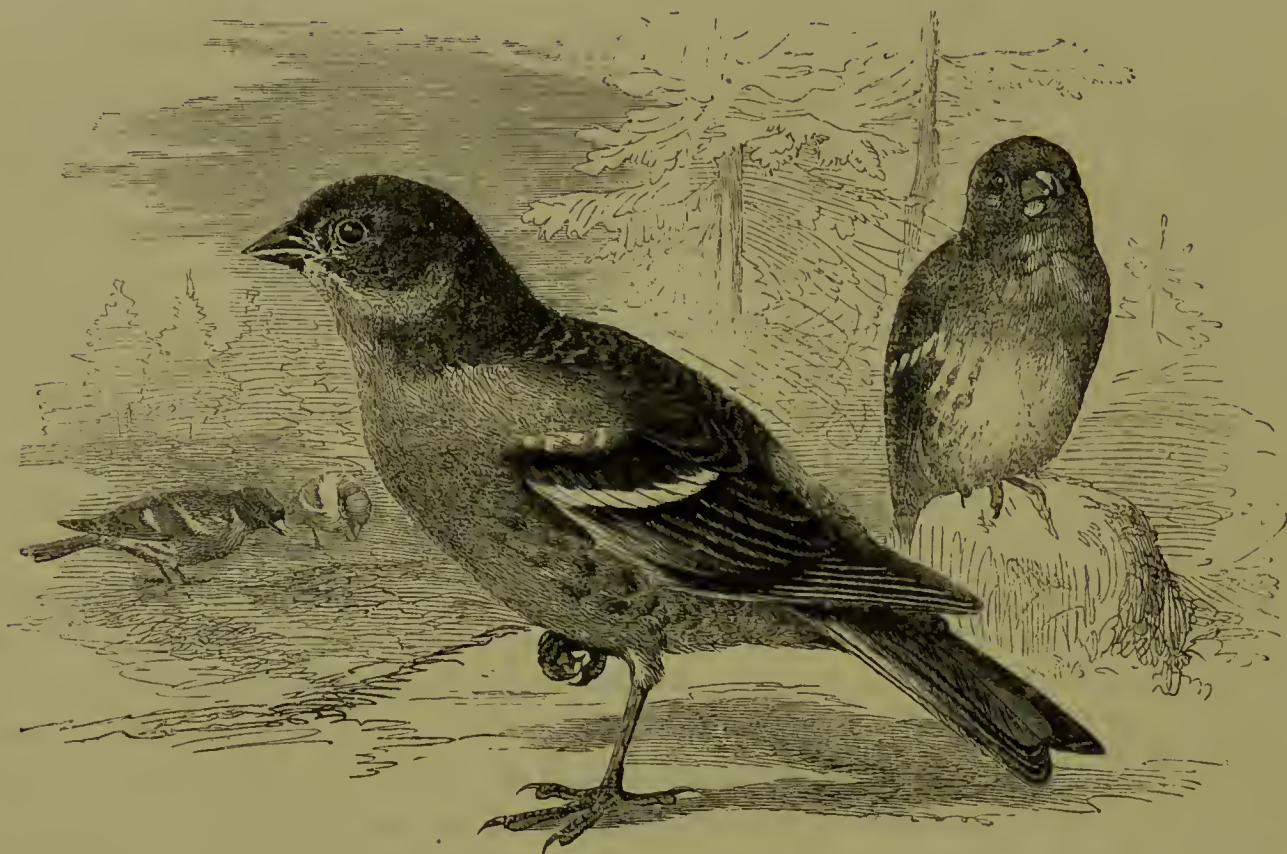
The SNOW FINCH or STONE FINCH (*Montifringilla nivalis*) is nearly allied to the Finches before described, but differs from the preceding species in the shape of the long, curved, and spur-like nail upon the hinder toe, its long wings, and the fact that both male and female have the same coloured plumage. We shall therefore consider it as the type of a distinct group. The length of this species is eight and three-quarter inches, and its breadth across the wings fourteen inches. The plumage is simple but very beautifully marked. In the old birds the head and neck are of a blueish ash-grey, the mantle brown, the upper wing-covers half black, half white; the under part of the body of a whitish shade; the throat black or blackish. After moulting, the original colours of the plumage are concealed by the light borders of the feathers. The tail is white, with the exception of the upper cover and its two middle feathers, these being white tipped with black. The beak is black in summer and yellow in winter; the feet are black, and the eyes brown. The young birds are grey; the throat is of a dirty white; and the feathers that form the white markings on the wings, are streaked with black, and have black shafts. Among European birds are two distinct species of Stone Finches, the first of which belongs to the more northern countries, the other is found in great numbers in most of the Tyrolean and Swiss Alps. Both pass the summer months in mountain ranges, preferring such wild and barren places as lie close to the boundaries of eternal snow and ice in these deserted regions, always mounting higher and higher, as the warm rays of the sun remove the snowy mantle from the naked rocks. In cold seasons they remain lower down, but never leave the vicinity of the glaciers, where they may be seen generally in pairs or small parties, perching upon such bare and rugged peaks as rear their crests nearest to the sky, and over which they fly in joyous confusion, or hop about the ground like the Chaffinches. During especially severe winters they may be met in the valleys, searching for the various seeds of which their food consists, and even there always seem to prefer the highest ground. Tschudi tells us that upon one occasion, a whole cloud of Snow Finches, numbering upwards of a thousand, was seen by a hunter in the open country near Kleven, of which he succeeded in killing some hundreds; the poor birds appearing to be so hungry and stupefied, that when he fired, such as had not been reached by his shot fell to the ground in company with their wounded fellows. Most observers tell us that they are harmless and confiding, and may often be found flying in and out of the huts of the mountaineers, who take great pleasure in watching and feeding them; they are, however, very timid, and will take every precaution to prevent the discovery of their nests.

The song of the Snow Finch is a short, disjointed, piping note, or a call resembling that of the Cross-bill; when frightened it utters a kind of chirp: its voice is principally heard during the period of incubation. The breeding season commences in April or the beginning of May. This bird builds by preference in deep clefts of perpendicular rocks, though occasionally it will occupy holes in walls or the roofs of houses, whether the latter are inhabited or not. The nest is capacious and substantially constructed of fine grasses lined with wool, horse-hair, or feathers. The young are tended by both parents with great affection, and fed principally upon the larvæ of insects, spiders, and little worms. When the nest is situated in a deep cleft, the young are assisted in climbing out of it by the old birds, in order that they also may revel in the beds of snow. These Finches are constant guests at various Alpine hospices for travellers, and meet with every attention from the monks who inhabit them.

THE WINTER FINCH.

The WINTER FINCH (*Nyphæa hyemalis*) has been described as a species of Bunting, with the beak of a finch and very indistinct markings on its plumage. Its body is powerful, its neck short, the

head large, the beak short and very pointed, the legs slender, and the feet of moderate length. The wings are short, but concave and rounded, the third and fourth quills being the longest; the second nearly the same length, and the first shortest of all. The tail is long and forked, the plumage very soft and lax. In the male bird the head, neck, back, wings, tail, and front of the breast are blackish grey, which is darkest upon the head; the wings are bordered with white, the two outermost tail feathers, the lower part of the breast and belly being also white. The beak is reddish white, and dark at the tip; the eyes are blackish brown. The female is paler than her mate, and marked upon the back with brown. The length of the male bird is five inches and three-quarters, its breadth nearly seven inches; the female is five and a half inches in length, and eight and a quarter across.



THE MOUNTAIN FINCH (*Fringilla montifringilla*).

This species, which belongs to North America, may be considered the best-known member of its family. "I have travelled," says Wilson, "over the country from North Maine to Georgia, a distance of 1,800 miles, but I do not think there was a day, or indeed an hour, in which I did not see a flock of these birds, often numbering thousands; and several travellers with whom I conversed gave me similar accounts of their experience." On the other hand, we are told by many American naturalists that the Winter Finch, as its name would show, is only to be met with in these numbers during the winter, and is not seen in the United States during the summer months. It is an inhabitant of the northern mountains of America, where it builds its nest, and from thence it wanders south when winter closes in. This species will occasionally migrate as far as Europe; and Temminck assures us that several have been captured in Iceland; indeed, it is upon this authority that we reckon them amongst European birds. Winter Finches are seen in the United States about October, departing about the end of April, and migrating by night; hosts of them are often found early in the morning in localities where not one was to be seen the evening before. On first arriving they fly about the outskirts of the woods and hedges in parties of from twenty to thirty, but at a later period

assemble in flocks of some thousands. As long as the ground is uncovered, they feed upon grass-seed, berries, and insects, and are often to be found in company with partridges, wild turkeys, and even squirrels; but as soon as the snow begins to fall, Winter Finches make their appearance in the farmyards, open roads, and streets of the town, and place themselves under the protection of man, who shows how much he is to be trusted by capturing hundreds of these diminutive creatures. Still this bird has more friends than enemies, and many Americans regard it with the same affection that we feel for our robin redbreast, and will feed it in a similar manner. Its confidence in man is so great, that it will allow a horseman or foot passenger to approach quite close to it in the street, only flying away if it has reason to think it will be molested. Thus it lives until the winter is passed, when it



THE BROWN LINNET (*Cannabina linota*).

quits the towns and villages for its favourite mountain or native haunts. The Winter Finch but seldom joins company with any other birds, though in the villages and farmyards it will associate with the so-called "Song Sparrow" and domestic fowls, keeping, however, somewhat apart. It passes the night either perched upon a tree, or in a hole, and often makes a place for itself in stacks of corn. In its movements the Winter Finch much resembles our sparrows, and hops very lightly over the ground, testifying great readiness to engage any of its kind in single combat. As soon as these birds return to their native places the work of incubation commences, and the males are constantly engaged in furious contentions, chasing each other through the trees with wings and tail outspread, and thus exhibiting their plumage in all its varied beauty. At such times their simple but pleasing song is at the best, its principal feature being a few long, drawn-out notes, that are not unlike the twitter of a young canary.

When about to build, the little pair seek a quiet spot in which to make their nest, preferring a rock thickly covered with bushes; and there upon the ground they construct their home, forming it of

twigs and grass, and lining the interior most delicately with fine moss and horsehair. The four eggs of which a brood consists, are of a yellowish colour, thickly covered with reddish spots, and measure five-eighths of an inch across the broadest end. Both parents tend their young with great care, feeding them for some time after they leave the nest, and warning them of danger by a peculiar cry. The Sparrow Falcon (*Rhyncodon sparverius*) must be regarded as the most formidable of the many enemies of the Winter Finches. Wilson mentions having seen this bird continually hovering in their neighbourhood, watching for a favourable opportunity, and, when the proper moment arrived, the destroyer would swoop down upon its victim, seize it, and carry it to the nearest tree to be devoured. The weasel, and many of the smaller kinds of beasts of prey, are also numbered among their foes.

The LINNETS (*Cannabinae*) have lately been formed into a distinct tribe, on account of their conical-shaped bill, which is more rounded, shorter, and sharper at its extremity than in the true Finches. The wings are elongated, slender, and pointed, and the tail forked at the end. The representatives of this family are met with only in the northern parts of the Old World.

THE BROWN LINNET.

The BROWN LINNET (*Cannabina linota*) is five inches long and eight and a half inches broad across the wings. The colour of the feathers is very variable, according to sex, age, and season of the year. During the spring the adult male is most beautiful. The front of its head is bright blood-red, the back of the head, neck, and sides of the throat are grey, the back rust-brown, the rump whitish, the face and part of the neck a whitish grey-brown, the breast a blazing blood-red; the remainder of the lower part of the body white, and the sides a light brown. During the autumn the beautiful red tints of its plumage are concealed under the light borders of the feathers; but as these wear off the creature regains its brilliancy of hue. In the female the head and neck are brown, or of a deep yellowish ash-grey, the feathers spotted upon the shafts. The mantle is rust-brown, the feathers of the back having a light edge, and a dark streak along the shaft. The upper part of the breast and sides are light yellowish brown, thickly marked with blackish brown along the body. The young resemble the mother, but have more conspicuous spots upon their somewhat paler plumage. In such birds as are captured when young, the feathers never acquire their beautiful red colour, and old ones, when in confinement, soon change their brilliant hues for a pale yellow or yellowish red.

The Brown Linnet inhabits the whole of Europe, a large portion of Northern Asia, Asia Minor, and Syria, and during its migrations appears regularly in North-western Africa, though rarely seen in the north-eastern part of that continent: in Germany it is exceedingly common, particularly in hilly districts; but it avoids high mountains and extensive forests. These birds are of a social and cheerful disposition, preferring society even during the breeding season; they assemble as autumn approaches in companies of about a hundred, and during the winter associate with various other species. They fly to and fro over the country notwithstanding their parental duties; indeed, we observed a Brown Linnet early in the summer in our garden, at a distance of nearly a mile from its nest; and, strange to say, in these excursions the female frequently accompanies her mate. The affectionate tenderness shown by these little creatures towards each other is very striking. Should one of the pair be shot, the other will at once come to the ground, uttering most piteous cries, as though it could not endure the loss of its beloved companion; the same attachment is exhibited to the eggs and nestlings; so that the parents frequently allow themselves to be captured rather than be separated from their young. The flight of the Brown Linnet is light, rapid, and hovering; when about

to descend, the bird wheels around in circles, and often almost touches the earth whilst on the wing, then rises again into the air, and continues its flight for some distance before settling. It hops nimbly over the ground, and, when singing in the trees, is usually perched upon the topmost branch, or on a projecting twig. Its voice may be heard from March to August, and the young sing from the time of their moulting in the autumn all through the bright winter days of November and December. The young male easily learns to imitate the notes of other birds, but forgets them after a few repetitions. We have heard a Brown Linnet that could perfectly imitate the song of the Chaffinch, and another that exactly copied the notes of the Siskin. Naumann mentions instances of its having even learnt the song of the Goldfinch, Lark, and Nightingale. This species begins its preparation for building, early in April, and breeds two or three times within the year. Its favourite nesting-place is among short brushwood, at no great distance from the ground. The nest is built externally of twigs, fibrous roots, and blades of grass, within which is a second layer more carefully constructed, but composed of the same materials, and this again is lined with wool and a little horse-hair. The brood consists of from four to five eggs of a whitish-blue colour, marked with a few reddish spots; the female sits for thirteen days, after which time the young are most assiduously tended by both parents until they leave the nest, the last brood always remaining under supervision for a longer period than their predecessors. Whilst the female is sitting she is cheered by the song of the male, who usually perches on a neighbouring tree. Unlike the Chaffinches, these birds live peaceably together during the breeding season, the males often taking little excursions in company, or they will perch and sing together, not out of rivalry but in harmony with each other. The following account is given of the proceedings of a pair of these little songsters that had made their home close to a house:—"The nestlings who, when discovered, had just left the shell, remained perfectly quiet in their snug abode, even when expecting or receiving their food, but were no sooner fledged than they at once began to try the power of their wings, continuing these efforts during an entire evening with so much success, that before break of day they had finally left the nest. They remained for some time close at hand upon the thickly-foliaged trees, and then, accompanied by their parents, quitted the spot. These birds were a source of great pleasure to us, as, contrary to the usual habits of the species, they did not leave off feeding when we approached, even if accompanied by several people. The time that elapsed between the different meals given to the young was not more than twelve or sixteen minutes; when feeding them the parents would perch upon a tree close at hand, gently utter their call-note, and then flutter towards the nest, which was always approached from the same side. Each young bird was fed in turn, the male commencing operations; when both he and his mate had emptied their crops into the gaping beaks of their progeny, they flew away to obtain a fresh supply. The female but once came back alone, and only on that occasion did she take the precedence of her mate in feeding the brood. Every morning before leaving the nest the mother carefully arranged and cleaned her little domicile, and instead of throwing out what she cleared away, swallowed it, and spit it out again at some distance from the nest. We never observed the male bird assist in this business except once, and have no doubt that the precaution exercised by the mother was intended to prevent any trace of her brood from being discovered." The Brown Linnets but seldom leave their progeny, and will continue to feed them long after they have been placed in a cage. Bird-fanciers often take advantage of this, and we have never known a case in which the parents under such circumstances have neglected to provide for the wants of their offspring, so that the old birds may frequently be enticed farther and farther from their breeding place by the gradual removal of the cage to a distance. This manner of feeding the young has, however, its disadvantages, as they remain wild and shy for a much longer period than if brought up by hand.

THE MOUNTAIN OR GREY LINNET.

The MOUNTAIN OR GREY LINNET (*Cannabina montium*) in many northern countries seems to take the place of the species just described. Its length is four and three-quarter inches, and the span of its wings eight and a quarter inches. The plumage on the back is of a blackish brown, the feathers being edged with rust colour, the rump is red, the breast of a rusty yellowish grey striped with brown, and the remainder of the lower part of the body white. This bird is always to be met with in the northern parts of Scotland, also in Norway, Lapland, Russia, and Siberia; it inhabits mountain regions where stunted shrubs and low Alpine plants sprout from between the rocks. In its habits it resembles its congeners, but is perhaps of a somewhat livelier and more cautious disposition. Its voice reminds us of the notes of the Siskin and Red Linnet, and though its song can scarcely be called beautiful, it has something so spirited and cheerful in its tones that the inhabitants of such northern countries as are not much frequented by Finches take great pleasure in listening to its strains. In captivity the habits of the Grey Linnet are the same as those of others of its race, and it soon becomes accustomed to a cage. The food of this little chorister consists of seeds. The Mountain Linnet is frequently found in the southern parts of Sweden; it is said to be rare in Scotland though common in England, and is frequently caught in the vicinity of London. Solitary birds of this species are often met with in Germany; and during very severe winters they will even wander as far as Southern Switzerland, Northern Italy, or the south of France.

Many small Finches, distinguished for their long and slender beaks, were formerly classed under the general name of Siskins, but have lately been arranged in separate groups with more or less reference to the colour of their plumage.

THE BIRCH-TREE SISKIN.

The BIRCH-TREE SISKIN (*Linaria rubra*) is extremely common in Central Europe; by some authors it has been described as the Red Linnet, nevertheless it is so entirely unlike the Linnet, that only a novice in ornithology could mistake them, even at the first glance. The adult male of this species is a beautiful bird, as will be evident from the following description:—The front of the head is of a dark carmine-red, the rump pale red, and the feathers on the upper part of the body brown with light edges; the wing and tail feathers are black bordered with grey, and the wing exhibits two bands of a lighter shade than the remainder of its surface. The under part of the body is entirely white, the throat black, the fore part of the neck, upper breast, and sides, of a pale carmine-red, this last colour being entirely wanting, or very indistinct in the female. Shortly after moulting, the beauty of the plumage much deteriorates, as the feathers then become edged with grey. The young birds resemble the mother, and, when nestlings, are of a uniform brownish grey with brownish markings along the body; the head is blueish, the lower mandible yellow, the feet greyish brown, and the eye dark brown. The Birch Siskin is of nearly the same dimensions as the Linnet, being about five inches long and eight and a half inches across the wings; the female is in a very trifling degree smaller than her mate, and both birds differ from other Finches in the unusual elongation of the beak, which is somewhat conical and compressed at the sides, and by their comparatively strongly-developed wings.

Those of us who have been favoured with a peep into the extensive northern forests can understand why it is that the Birch Siskins are so rarely seen during the winter in Central Europe; they seldom need to migrate, the birch-trees of those woods producing in great abundance all that they require; it is only when their usual supply of seeds and fruits fails that these birds decide on



SISKIN, BULLFINCH, AND GOLDFINCH.

removing for a time to more southern regions. Our readers will readily believe that this necessity is of very unfrequent occurrence, when we tell them that in cold northerly countries hundreds and thousands of square miles are entirely covered with trees, yielding the seeds preferred by these children of the forest. In short, the Birch-tree Siskin occupies the same position with regard to birch woods as does the Cross-bill to the tracts of fir and pine-trees, finding in them abundance of food during the winter months, and plenty of insects during their breeding season; indeed, the swarms of flies met with in these regions are prodigious, every tree or bush being often literally enveloped in a cloud of them. We have frequently been told that these birds will breed in Germany, but as yet no nests have to our knowledge been discovered so far from their usual haunts. Even in the north it is extremely difficult to find them, and for the first description of one we have to thank Boja, whose statements have been corroborated by Schröder. "You know," says the former writer, in a letter to his brother, "what difficulty I have had in my search after a Siskin's nest, and I should never have found it had not accident placed it in my possession. As I was descending a steep and almost naked precipice near Norwick my foot slipped, and I fell heavily into a cleft of the rock, disturbing by my fall a female bird sitting upon her nest, which was fixed upon the strong branch of a birch-tree, and contained four eggs, not larger than those of our Goldfinch, and of a greenish-white colour, marked with brownish red."

The Birch Siskins usually make their appearance in Germany about the beginning of November, and that in very considerable numbers, though, as we observed above, their coming is by no means regular, and only takes place when they are driven from their native haunts by want of food. They usually select districts planted with alder or birch-trees, from whence they fly over hill and dale in company with Greenfinches, often passing the night upon the hedges, and feeding upon all kinds of oily seeds gleaned from the fields, but preferring those of the birch and alder. It is very evident when these birds first arrive in that country that they are by no means aware of their danger in venturing so near their arch-enemy man, but will come down and seek their food close to his dwellings, indeed it is only after repeated proofs of his treachery that they begin to lose their confidence and grow cautious and shy.

The Birch Siskin is a restless, lively little creature, and more skilful in climbing than any of its congeners; indeed, it will bear comparison in that respect with the Cross-bill or Titmouse. Trees, when covered with these birds, present a most beautiful appearance, as the latter hang upon the branches or climb in busy crowds to reach the seeds; they are also quite at home upon the ground, to which they descend and hop about much more frequently than any other members of the family. Their flight is rapid and undulating, they usually hover for a time before perching, and but rarely frequent high trees, except when compelled by necessity to rest upon them in passing over extensive and open districts. The flocks when once united never separate, and such as stray from the main body are recalled by their little companions with anxious cries. Quarrelling or strife are unknown among them, they even associate as peaceably with Linnets and Field Sparrows as they do with their own species. Birch Siskins are excellently suited for a cage for they soon become very tame, and seem to rejoice in displaying their activity and skill in climbing. They are readily caught by the assistance of a decoy and a few limed twigs; numbers are thus captured, as the poor little prisoners are often followed by others of their kind who will not desert them in their affliction. Their flesh is frequently eaten, and their song is simple but melodious. It remains as yet to be decided whether the American Birch Siskin is the same species as that inhabiting Europe. Richardson observed it during very severe winters in all the fur districts, and Audubon speaks with delight of the tameness and confidence in man exhibited by those he met with in Labrador.

The TRUE SISKINS have recently been separated from the species just described, by reason of their long and delicately-pointed beak, the ridge of which is somewhat arched. They are also distinguished by their short claws and comparatively long wings, and by the colour of their plumage, but except in these respects the birds strongly resemble each other.

THE COMMON SISKIN.

The COMMON SISKIN (*Spinus viridis*) is about five inches long, and nine across the span of the wings. In the male the top of the head is black, the back yellowish green, streaked with blackish grey; the wings, which are blackish, have two yellow stripes. The under part of the body is bright yellow upon the breast, and white upon the belly; the throat is black. The female bird is greyish green upon the upper parts of the body, streaked with a darker shade; the under parts are white or yellowish white, and marked with longish black spots. The young are yellower and more variegated in their markings than the female.

The Siskin is particularly numerous in mountain regions, chiefly inhabiting the interior of Norway, Sweden, and Russia. It is unknown in Northern Asia, but is occasionally met with in the north-eastern portions of that continent; Radde mentions flocks of these birds seen by him in the Bareja Mountains, and near the banks of the Amur. The Siskins are birds of passage, and, except in the breeding season, spend their time in wandering over the country, going south for the winter in great numbers, should the season be unusually cold or food deficient. In the summer months they frequent the pine forests of mountainous districts, living upon the seeds that are found there in abundance. In these places they also breed. During their migratory excursions they often appear in winter by thousands close to the villages, in districts where, in less inclement seasons, not one is to be seen. In these wanderings, barren tracts of country are carefully avoided, and they prefer perching upon the topmost branches of forest trees. "The Siskin," says Naumann "is always lively, adroit, and bold, and very attentive to the care of its plumage; it is brisk in its movements, and a most capital climber." In this respect it much resembles the Titmouse, frequently hanging backwards from the boughs, which it ascends quickly, even should they be quite perpendicular—in short, among the branches it is never quiet, except when asleep or while taking its food. It can also hop nimbly upon the ground, always, however, appearing to avoid descending from its perch, if not obliged to do so. Its flight is undulating, rapid, and light; it can pass with ease over large tracts of country, and rise to a considerable height in the air. Its song is a very simple, but not unpleasing, twitter. In all other respects this species strongly resembles the Birch-tree Siskin; in disposition it is social, peaceful, and thoughtless—indeed, we do not know any bird that shows so little regret at the loss of its freedom, or is more suitable for domestication. Moreover, it is very docile, and learns many little tricks, is not at all dainty concerning the quality of its food, and becomes so tame that it may be allowed to leave its cage at pleasure, and will obey its master's call. Hoffmann relates of several of these birds that were kept in his aviary, that they could be allowed to fly about, and would readily take their food from his hand. On one occasion, as he tells us, a flock of wild Siskins passed over the garden while one of his captive birds sat perched upon his hand. The tame bird had no sooner heard the call-notes of its brethren than it responded to the invitation, and flew at once to join the party upon a neighbouring tree, receiving a very warm reception from the little strangers, both individually and collectively. Of course he gave his pet Siskin up as lost, but made an effort to allure it back by its call-note and some favourite food. These efforts were successful, and the truant was again soon perched upon his hand, although it was followed by one of the wild birds to within six feet of the place where he stood.

Seeds of many kinds—but principally those of trees—young buds, tender leaves, and, during the breeding season, caterpillars and various insects, constitute the ordinary food of these birds, the

nestlings being fed exclusively upon the latter diet—caterpillars, aphides, &c. It is for this reason that the parent birds often frequent gardens and orchards, accompanied by their young, such localities affording a larger supply of insects than is to be met with in the forests. When in captivity a little seed and a few green weeds will satisfy all their requirements.



GOLDFINCHES AND NEST.

The Siskin seeks its mate in April, obtaining her favour by very much the same efforts as those practised by the Cross-bills, the male bird, at such times, looking much larger than it really is, spreading its wings, and wheeling around her at a considerable height in the air, and at the same time singing vigorously. During this courtship the female remains quite quiet, only from time to time caressing her companion with her beak, or making short excursions in his company. Occasionally many of these little couples will join company, and live in the utmost peace and unity. The building of the

nest begins shortly after the pairing of the birds, and all must admire the cunning with which the female selects a suitable spot, and fully appreciate the popular idea that a Siskin's nest is invisible. The locality fixed upon is generally the extreme end of a thick, lofty branch, the foliage of which entirely conceals the little domicile. Fir and pine-trees are frequently selected for nidification, and so perfectly does the exterior of the nest resemble the branch upon which it is placed, that it is only recognisable when seen from above, in which position it is betrayed by its rounded interior—indeed, so completely is it hidden from observation, that a servant sent by us into a tree to discover the nest, was about to descend without it, even though it lay but two feet distant from him; and had we not recommended him to strip the branch by removing one twig after another, he probably would have sought for it in vain. This plan, however, succeeded, and the prize was secured. The skill with which these little creatures conceal their young has prevented any one from having seen the nest in progress of erection, and will account for the old-fashioned legend that the Siskin builds with invisible stones—for so very great is the difficulty of distinguishing these structures from the surrounding branches, that few naturalists have succeeded in finding them. The progress of the work is extremely rapid. The two birds that we saw laboured alternately, each waiting while the other supplied fresh materials, and then flew together in search of what more was required, bringing back beakfuls of dry twigs, wool, or moss, which they tore from the bark of the trees. It was curious to see the little creatures prepare the wool, with which the nest is lined, by holding it with the foot while pulling it out with their beak to render it soft and elastic. In some other instances that have come under our notice, the female alone constructed the nest, the male keeping near her during the whole time. When busy in the preparation of their dwelling, these little birds testify no uneasiness if watched or approached, though they have been known to leave a partially constructed nest, and commence another. The vicinity of water is always preferred in the choice of a tree on which to build. The nests vary considerably in their appearance. They are formed of twigs and moss, bound strongly together with cobwebs, and lined with feathers, hair, and various kinds of delicate fibres. The walls are very thick, and the central cavity deep. The breeding season usually commences about the beginning of June, but young fledged birds have been seen as early as May. The eggs, which resemble those of the Brown Linnet, differ remarkably from each other in size, shape, and colour, but are, for the most part, of a whitish-blue or blueish-green, marked with a variety of spots and veins. The female alone sits upon the eggs, remaining on the nest from the time that the first is laid. The Siskin has been known to breed in captivity.

THE GOLDFINCH.

The GOLDFINCH (*Carduelis elegans*) may be considered as the type of a group that has but few representatives, the only other species with which we are acquainted being an inhabitant of the West Indies. The Goldfinches are distinguished by their long, conical, compressed beak, bent slightly at the tip; short strong legs, tail of middle length, and variegated exterior. The feathers of both sexes are alike in their colouring, but the young bear no resemblance to the parents. The length of the male is about five inches, its breadth eight and three-quarter inches. The female is not quite so large. The tail measures two inches, and the wing two and a quarter inches from the shoulder to the tip. The plumage is most beautifully marked and ornamented (see Coloured Plate V.); the beak, which is flesh-coloured at the base and blue at the tip, is surrounded by a black circle, and this again is encompassed by a broader band of red. The back of the head and part of the otherwise white cheeks are black. The back is brown, the belly white; and the sides of the upper part of the breast light brown; the wings and tail black, streaked with white, and the quills golden yellow at the root. The two sexes are so much alike that it requires a practised eye to distinguish them, though the male has somewhat more red on the face and a deeper black upon the head than the female.

The Goldfinch inhabits a much larger extent of country than most others of its race, being found over the whole of Europe, in Madeira, the Canary Isles, North-western Africa, a large part of Asia, and even in Cuba. Districts rich in trees and plants are the favourite resorts of this bird, from whence it flies over the surrounding country in search of food, frequently visiting our fields and gardens, and enlivening us by its activity and beautiful song. When upon the ground, its movements are decidedly slow and awkward; but nothing can exceed its nimbleness in climbing, and it may often be seen hanging from a twig head downwards, for whole minutes at a time. Its flight, like that of its congeners, is light, rapid, and undulating; like them it hovers before perching. It generally prefers the highest branch, upon which it sits bolt upright, with plumage tightly compressed; but its restless disposition prevents it from remaining for any great length of time upon one spot. It is remarkably shy and peaceable in disposition, living upon excellent terms with its feathered brethren, but preferring the society of the Titmouse. The song of the male is loud and pleasing, and his voice may be heard throughout the whole year, except during the moulting season. These birds subsist upon various kinds of seeds, principally those of the thistle tribe, so that wherever the latter are found we may look for the presence of these pretty songsters; indeed, a more pleasing sight can scarcely be imagined than that of a party of Goldfinches, as they hang head downwards from the thistle tops, and rob them of their seeds by the aid of their long and pointed beaks. In this business the harsh, strong feathers upon the head are of great service, as they shield that part from the prickly mass from which they pluck their food. During the summer, they destroy large quantities of insects—indeed, upon these they feed their young, thus rendering inestimable service to mankind. The nest is built upon a tree at about twenty or twenty-four feet from the ground, and is so carefully concealed at the end of the branch upon which it is placed, as to be quite imperceptible until the leaves fall. The female alone works at its construction, employing moss and fibrous roots for the outer wall, and weaving these materials together in the most artistic manner with spiders' webs; the interior is then lined with thistle-down, which is kept in its place by the aid of horsehair or bristles. The male bird sings with great vigour while the work progresses, but rarely assists his mate in her labours. The brood consists of four or five delicate, thin-shelled eggs, of a white or blueish-grey colour, lightly sprinkled with violet grey spots, which form a kind of wreath at the broad end. The eggs are generally laid about May, and the parent birds breed but once during the summer. The female sits upon the nest for thirteen or fourteen days, never leaving her brood for more than a few moments; her mate brings such food as she requires, and subsequently assists her to feed the young for some time after they are fully fledged. The capture of Goldfinches is attended with but little difficulty, and, though shy, they are easily tamed, and taught a variety of pleasing tricks. They will pair with Canaries when caged, and the progeny have the colours of both parents most curiously blended in their plumage. The food of these birds, when tamed, should consist of seeds and an abundance of green-stuff; but whilst nestlings, they must be fed upon bread soaked in water, until their beaks have acquired a little strength.

THE GOLDEN THISTLE-FINCH.

The GOLDEN THISTLE-FINCH (*Astragalinus tristis*), an inhabitant of the New World, is an elegant creature, of about four and a half inches long and eight broad. This bird resembles our Goldfinch in its appearance, the yellow plumage being varied by a black and white bordering to its wings and tail-feathers. The beak and feet are brownish yellow, and the eyes dark brown; the coat of the female is deeper in its hues than that of her mate, and has no black spot on the forehead; in other respects it so exactly resembles its European congener, as to require no further description, and Audubon tells us that their voices are so similar as to be scarcely distinguishable.

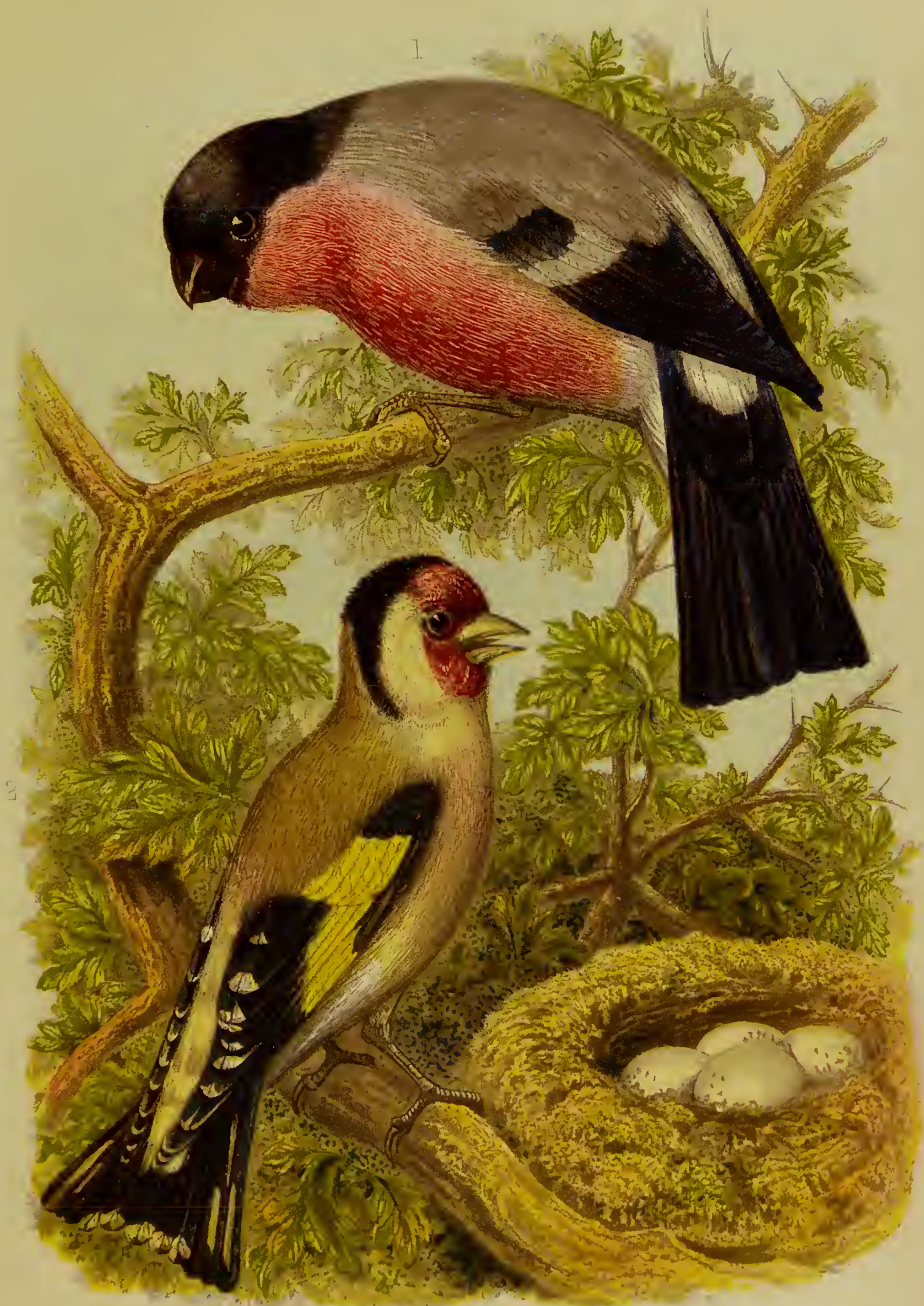


Plate 6, Cassell's Book of Birds

1. BULLFINCH

Pyrrhula vulgaris

2. GOLDFINCH

Carduelis elegans

Life Size

THE SPARROWS PROPER (*Passeres*).

THE SPARROWS are known by their strong, thick, stunted beaks ; short, stout legs, furnished with toes of moderate length and crooked claws ; their wings are short, and the tail more or less graduated ; the body is stoutly built, and the plumage simple in its colour and markings. The feathers of the male are of chestnut-brown, grey, or golden yellow, while those of the female are entirely grey, streaked with brown ; the young are like the mother. The members of this family strongly resemble each other in their mode of life and habits ; all or more or less stationary, frequenting agricultural districts, and any place inhabited by man ; never going to a great distance from their dwelling-place, and passing their time principally upon the ground in search of food. The Sparrows show as great a dislike to barren districts, as to thick woods ; preferring such spots as are planted with shrubs or hedges, upon which they seek shelter in times of danger ; holes in rocks, or crevices in walls, are, in like manner, sometimes employed for this purpose. In their movements they are clumsy, and hop when upon the ground with apparent effort ; their flight is violent, and far more rapid than accords with their strength, so that they are soon exhausted. Their song scarcely deserves the name, and the call-note is monotonous and unpleasing. These birds are intelligent and social in one sense of the word, but, although they love to congregate with other species, they are extremely quarrelsome and spiteful, especially during the season for choosing a mate, when most pertinacious and furious battles are of constant occurrence—the enraged combatants falling upon each other, biting, struggling, and screaming in a manner that is perfectly astounding to a spectator of this miniature warfare ; indeed, it seems as if these encounters took place simply to gratify the pugnacious propensities of the irritable little creatures. All the members of this family bathe frequently, paddling about when in the water until their coats are quite saturated, and subsequently preen their feathers with the greatest care. Corn and insects form their principal food, their preference for the former, perhaps, accounting for the pertinacity with which they frequent the dwellings of men. During the summer they industriously pursue various kinds of insects, with which they feed their young. They are fond of fruit, and often attack our orchards, doing an incalculable amount of injury. It is believed that these birds produce many broods in the year. The nest, which is placed in a hole or upon the branch of a tree, consists only of a heap of scraps, thrown inartistically together without arrangement or care, except that the softest materials should line the interior.

Sparrows are totally unfitted for life in a cage.

THE COMMON SPARROW.

The COMMON or HOUSE SPARROW (*Passer domesticus*) is well known to all our readers. The mantle of the male bird is brown, striped with black, the top of the head blueish grey, edged at its sides with deep chestnut. The wings are marked with two bands, one white, the other of a rusty yellow colour, and extremely narrow ; the cheeks are greyish white, the front of the neck black, and the under part of the body light grey. The female is of a light brownish grey upon the head, whilst over the eyes runs a pale yellow line ; the back is light brown, streaked with black ; the whole of the lower part of the body greyish white ; the young resemble the mother until the first moulting season. The beak is black in summer and grey in winter, the feet horn-grey, and the eyes brown. Many varieties of plumage occasionally occur, some individuals being white, or yellowish white, and some nearly black. The male and female differ but little in size ; both are about six or six and a quarter inches long, and nine to nine and a half across the wings.

The House Sparrows inhabit a greater extent of country than almost any other bird, being found



WINTER VISITORS TO THE VILLAGE.

over the whole of the northern portion of the Eastern hemisphere ; moreover, it is a remarkable fact that wherever met with they are always in a state of semi-domestication : even in Australia, into which country Sparrows were only introduced some few years ago, they hold the same relation to man as in Europe. Few villages are to be found in which these little creatures have not settled, and that in the fullest sense of the word, as they never fly more than a mile from the place where they were born, except when in search of a spot on which to establish themselves. We are told by a Norwegian naturalist that these birds are yearly seen flying about some parts of Norway in couples, going from

house to house, but that, not finding the country to their liking, they soon disappear, leaving no trace behind. Our House Sparrow is social in its habits, and even during the breeding season can hardly be said to live apart from its fellows; the nests are placed very close together, the males appearing to enjoy each other's society even whilst the process of incubation is going on. The young join the rest of the troop as soon as they can fly. During the whole time that corn can be obtained, or any green plants remain, these flocks fly daily over the neighbouring fields and plains in search of food, returning in the middle of the day to the villages, where they rest, and in the evening assemble upon the trees or roofs to make their preparations for passing the night—a proceeding that is always accompanied by great confusion and much squabbling. In the winter time these intelligent little creatures prepare beds or nests of the warmest description, into which they creep for shelter from the cold; they also frequent chimneys, quite regardless of the smoke and soot with which they are often covered.

The Sparrow will attach itself to man, but never sufficiently so to overlook the precautions necessary for its safety; it is ever upon its guard, and when angry even its inflated plumage cannot conceal the glances of its bright and crafty little eye; the unexpected opening of a window, the approach of a stranger, or even a stick held up like a gun, will at once excite alarm and cause its instant flight. Unlike the Pigeon race, this bird seems to become more wary and cunning as its intimacy with man increases—indeed, it never seems to forget the lessons taught by experience. Despite the clumsiness of



SPARROW'S NEST.

its shape, the Sparrow has an air indicative of considerable spirit, as it hops energetically over the ground with tail borne aloft and head erect. The social disposition of these birds in no way interferes with their natural inclination to pick a quarrel upon every opportunity, and the most ludicrous combats often take place between the males relative to the appropriation of a mate. On these occasions, when the battle rages furiously, males and females alike mingle in the strife, until both parties come pecking, tumbling, and screaming through the air, to conclude the fight upon some neighbouring roof, forgetful in their fury of the safety they usually prize so highly, and take such precautions to ensure. During these contests they carry the head and neck erect, the tail raised, and their wings somewhat drooping. The Sparrow seldom flies at any great height; if perched upon a steeple, or other similar elevation, it will drop rapidly towards the ground before commencing its flight, rising again in a direct line when it wishes to attain the same altitude as before, although this attempt at soaring appears to cost the bird a great effort; it prefers, however, living at some distance from the ground.

These birds are capable of enduring almost any degree of cold, and but few perish even during the most severe winters. The note of the Sparrow is extremely displeasing; the young utter the same cry as the parents, and are very noisy while being fed. The female is exceedingly prolific, breeding sometimes thrice during the year. The nest, which is built early in the spring, is little more than a rude heap of straw, sticks, and paper, lined with feathers, and furnished with a kind of lid. Even this

slight preparation for her brood is often avoided by the cunning female, who will creep into the nest of a Swallow, there to deposit her eggs; and should she find a brood still occupying it, will at once destroy the helpless young ones, throwing them over the side, to make room for her own offspring, quite regardless of the cries of the unhappy mother. It was once believed that the Swallow would avenge the injury thus inflicted, but this we regard as a fable. The first eggs—generally from five to seven in number—are laid in March; the shell is smooth and delicate, of a dull purplish white, very variously spotted with brown or dark grey. The parents sit by turns on the nest for about thirteen or fourteen days; they feed the young at first with soft insects, and afterwards with corn that has been softened in their crops, until the fledglings are strong enough to eat seeds and various kinds of fruit. A week after the first brood has left the nest preparations are commenced for another, the second batch of eggs being laid within a fortnight of the departure of the first family; and thus they go on producing brood after brood until the end of September. Both parents are much attached to their offspring, and should one of them die, the other will use every effort to supply the wants of the young birds. Selby gives us a remarkable example of their perseverance in this duty. He had observed that a pair of Sparrows continued to carry food until winter was close at hand, and being anxious to discover the reason of such an unusual occurrence, examined the nest, in which he found a young bird whose foot had become entangled, and was in this manner imprisoned, so that the parents, unable to release it, continued to minister to its wants.

Many persons are inclined to regard Sparrows as mischievous creatures, without considering the immense services they render by devouring innumerable noxious insects. Frederick the Great of Prussia, we are told, was so prejudiced against these birds that he issued a decree that they should be shot whenever they appeared, and set a price upon their heads. The poor Sparrows were immediately pursued in all directions, and some thousands of dollars expended in the course of a few days by the State as payment for their destruction. The natural result of this barbarism followed; the trees that had been supposed to be injured by the birds were so covered with caterpillars and other insects, as to be not only barren of fruit, but also quite denuded of their leaves, so that the King was at once obliged to recall his decree, and had to command that Sparrows should be brought from all parts in order to repair the mischief that he had done. These birds have been introduced into Australia in the hope of their being similarly useful. Their flesh is often eaten, and in Italy small towers are built, in the compartments of which they make their nests; from these the young are taken as soon as fledged, and are considered great dainties when spitted on a stick and roasted. In old Gesner's time they were applied to a very different purpose: two spoonfuls of burnt Sparrow was supposed to be a cure for avarice, and the flesh of the nestlings, when applied with a little vinegar, was considered an excellent remedy for toothache. According to Pliny, their brains were extensively employed in medicine.

It is now satisfactorily decided that the Sparrows inhabiting Southern Europe are to be regarded as varieties of our *Passer domesticus*, and that the differences in their plumage are simply attributable to the diversity of external circumstances. The colours of the male alter considerably as it advances in age, or under any great change of climate; the reddish brown upon the head spreading towards the nape, while, on the contrary, the same beautiful tint upon the back becomes much more indistinct as the black shade at the lower part of the feathers extends and mingles with it. Thus the Sparrows of Provence and Italy, when no longer young, resemble ours in the colour of the back; but the head is generally entirely reddish brown or grey, the feathers being tipped with light brown only after the moulting season. These birds are very numerous in the warmer parts of Siberia, Buchara, Syria, Java, Egypt, and Nubia, and are also found in the islands of the Mediterranean, especially in Sardinia. The so-called Italian Sparrow (*Passer Italicus*) has been considered by some as constituting a distinct

species. In the old males the top of the head and back of the neck are dark reddish brown, the sides of the neck and cheeks white, the gorge, throat, and upper part of the breast deep brownish black, and the sides reddish grey. The female is of a rusty white, mingled with grey on the under part of the body, and the markings above the eyes are much paler than in the Sparrow of Northern Europe. This bird is principally found in the South of France and Italy, but is quite unknown in the interior of Spain and Egypt. The *Passer Italicus* will often mate with our common House Sparrow—the plumage of the progeny being a curious mixture of that of both parents.

THE SPANISH SPARROW.

The SPANISH SPARROW (*Passer Hispanicus*), or MARSH SPARROW (*Passer salicicolus*), is about six inches long, and its breadth across the span of its wings about nine inches and a half. The female is somewhat smaller than her mate, and in both birds the tail is generally longer and the tarsus shorter than in the Common Sparrow. In the colour of its plumage, however, the *Passer Hispanicus* bears but little resemblance to the House Sparrow; in the old males the head and back of the neck are of a dark reddish brown, the back is black, marked with chestnut, and the throat, breast, and sides are almost black, with a pure white streak passing above the eyes. The rest of the plumage is similar to that of the House Sparrow, and the females of both species are almost identical in appearance.

The Marsh Sparrow inhabits such districts as are abundantly watered, and is found in Spain, Greece, Northern Africa, and the Canary Islands, as also in some parts of Asia. It is eminently a field bird, and is seldom found near human habitations, preferring the vicinity of bogs or water, near which it is usually to be met with in large flocks. In Egypt these birds are more frequently to be seen than any other species. Bolle tells us that the date-palm is very attractive to them, and that for the sake of the shelter afforded by its crown of leaves, they will occasionally desert their favourite swamps—especially in Egypt, where they may be frequently seen near villages rich in these trees, whilst such as do not possess them are never visited. The same writer also mentions that on one occasion he saw a settlement of some hundreds living under the roof of a church. The flight of the Marsh Sparrows is very rapid, and, unlike the rest of their race, they keep quite close together when on the wing. In Egypt they may often be seen flying over fields of rice in such dense masses that numbers might be brought down at a shot. Their voice is considerably stronger, purer, and more varied than that of the Common Sparrow, and their disposition much more shy and timorous. The time of incubation in Egypt and the Canary Isles commences about February or March, and at this season the palm-trees of the Delta are covered with their nests, the holes in the stems being also employed as breeding-places. The nest itself is a very rude affair, and the eggs so closely resemble those of the Field Sparrow that the most practised eye cannot distinguish between them. By the month of May the young have left their home, and the parents at once set about making preparations for another brood. In no part of the world are these birds regarded with favour. In Egypt the damage done by them to the fields of rice is very serious, and Bolle gives us the following account explanatory of the aversion in which they are held by the inhabitants of the Canary Isles. The principal promenade of the capital, he tells us, is a most attractive, cheerful spot, encircled by banana trees, and prettily decorated with fountains and flowers; consequently, it is a favourite resort of the beauty and fashion of the place during the long summer evenings. Night after night elegant groups may be seen lounging and sitting, listening to the music, and watching the drops of water as they sparkle in the marble vases, or besprinkle the surrounding myrtles. You might imagine yourself in some scene embodied from an old romance, when all at once a strange rustling noise is heard in the summits of the neighbouring trees, and hosts of sparrows rise into the air, the birds having been disturbed in their repose by the lighting of the lamps. The scene is at once changed;

exclamations of disgust and annoyance take the place of laughter and gay conversation, and the señoritas, as they hurry from a spot suddenly become so dangerous to their elegant toilettes and rich mantles, are by no means sparing in their invectives against a torment that compels them to forego all the delights of a summer evening's walk with their cavaliers, whose complaints against the authors of the mischief are at any rate equal to their own. For this reason, the *pajaro palmero*, as it is called, is pursued with great eagerness, and every attempt made to drive it from the locality. Frequently in the twilight boys are sent up into the trees with lanterns to catch the birds whilst blinded by the



THE TREE SPARROW (*Passer montanus*), AND THE HOUSE SPARROW (*Passer domesticus*).

sudden light, and numbers are thus brought to expiate their crimes in the frying-pan, for their flesh is much esteemed. But little, however, can really be done to dislodge them during the summer; it is only in autumn, when the leaves have fallen, and the Alameda possesses no more attraction for their enemies than it does for them, that they condescend to seek a home elsewhere. The same author tells us that he has frequently seen these birds caged in the Canary Isles, but though quite tame, they did not appear to thrive, owing, he imagines, to a lack of insect nourishment.

THE FIELD OR TREE SPARROW.

The FIELD OR TREE SPARROW (*Passer montanus*) is met with in the middle and northern parts of Europe. It is a small bird, of five and a half inches long and seven and three-quarter inches across the wings, much resembling the Common Sparrow in colour, but easily distinguishable from it. The upper part of the head and neck are reddish brown, the mantle rusty grey, and the bridles, throat, and

a spot upon the cheeks black, the remainder of the head being white. The lower part of the body is light grey, the beak black, the feet a reddish horn colour. The sexes closely resemble each other, and the young are scarcely distinguishable from the parent birds.

This species inhabits more particularly the eastern side of our hemisphere, extending even as far north as the Polar Regions; it is met with in Asia, and is very numerous in Japan. Meadows, woods, and pastures, are its favourite resorts, and it is only in winter that it seeks the abodes of man, in the hope of obtaining food; when in the woods, it lives in very large parties except during the breeding season. In disposition the Field Sparrow closely resembles its congeners, but is somewhat duller, owing to the little intercourse it has with our race. Its bearing is superior to that of the House Sparrow, as the little creature is courageous, animated, and very trim in its appearance; its flight is light, and its pace easy and rapid; the call-note is short, but is similar to that of the rest of its family. From autumn to spring, seeds and berries constitute its principal food; in summer it feeds upon caterpillars, aphides, and other insects, rendering good service to mankind by clearing the trees and shrubs of these visitants, and thus atoning for the damage it frequently does to fields of wheat and millet. The nestlings are fed upon insects and milky grains of corn. The breeding season lasts from April to August, and each pair rears two families during the year, building their nests in holes of trees, or occasionally in convenient nooks in houses or out-buildings; in structure they are like those of other Sparrows. The brood consists of from five to seven eggs, resembling those of their congeners, but somewhat smaller; the parents sit alternately, the period of incubation lasting about thirteen or fourteen days. The Field Sparrow frequently pairs with other species; when this occurs the male is a Field and the female a House Sparrow; and the young, in such cases, are also capable of laying fertile eggs. These birds are easily caught by means of bird-lime and other simple traps, and may be reared upon all kinds of seeds, varied with a little green food.

THE PLAIN SPARROW.

The PLAIN SPARROW (*Pyrgitopsis simplex*) is a remarkable species, inhabiting the wooded country of Eastern Soudan, where it is frequently to be seen near the huts of the natives. In size it is larger than most of its congeners, its length being about six and a half inches, and the span of the wings ten and a half inches. The body is slender, and the beak much elongated; the plumage, as its name indicates, is of very uniform colour; the head and neck mouse-grey, the back and wing-covers rusty brown, the wing and tail quills dark brown, edged with a faint rust-red; the lower part of the body is of a light reddish grey, the throat somewhat lighter, and the belly whitish, the eye light reddish brown, the beak black, and the feet reddish horn colour.

This species is found over the whole of Central and Southern Africa, where it lives in pairs or small parties, being rarely seen in large flocks; its habits resemble those of our Field Sparrow, but, unlike that bird, it often frequents the depths of forests. The nest is built in holes of trees, or in the straw roofing of the native huts. Its voice is similar to that of other Sparrows, and the breeding season commences early in spring. We are unacquainted with the appearance of the eggs.

THE GOLDEN SPARROW.

The GOLDEN SPARROW (*Chrysospiza lutca*), also a native of Africa, is one of the most beautiful members of this family. The head, neck, and entire under part of the body are of a golden yellow, the mantle reddish brown, the small upper wing-covers black, the wing and tail quills dark grey, edged with reddish brown. The female is very like that of the Common Sparrow, her tints, however, being more golden, and her throat yellow. The young male is like its mother, but brighter. In size the Golden Sparrow resembles the Common species.

Well-watered plains, abounding in mimosa-bushes, afford the shelter most agreeable to these birds, and from such localities they sally forth in large flocks to fall upon the fields of corn or grass. They generally fly over a very limited extent of country, and exhibit so little timidity that they will allow a man to approach quite close to them before taking alarm; they are thus easily brought down by a shot, which only drives the rest of the party to a short distance. Before the rainy season, when the ground is parched and barren, the Golden Sparrow visits the villages and small towns in hope of finding food in the surrounding farmyards and gardens, and though at first rather shy, soon loses all fear of man.

Incubation takes place during the period of the heavy rains, the flocks dividing into pairs about the month of August, keeping at no great distance from each other, and often building close together. The nest, like that of other Sparrows, is constructed, without much art, of such materials as happen to be in the neighbourhood, and is placed but a few feet above the ground. The eggs, three or four in number, are white, spotted with brown, and about eight lines in length. The young are seen flying with their parents by the end of September or October. The moulting season is in the month of January, and by June or July the coats of the adult birds have acquired their greatest beauty. We have never seen the African Golden Sparrow in a cage, even in its own country, for though striking in plumage, it is entirely deficient in song.

THE ROCK SPARROW.

The ROCK SPARROW (*Petronia rupestris*) is most undoubtedly to be classed with the preceding birds, though differing from them in shape, colour, and habits. The body is compact, its length six and a quarter inches, and breadth across the wings nine and a half inches, the female somewhat less. The beak is comparatively strong, and the plumage very plain, resembling that of the female House Sparrow. The back is greyish brown, marked with blackish-brown and greyish-white spots; the upper tail-coverts grey, and striped, as is the forehead, with olive brown; over the eyes passes a lighter streak, and the tail-feathers have a white spot on the under side. In winter the beak is of a brownish grey, in summer of a yellow tint, the upper mandible being darker than the under; the eyes are brown, and the tarsus reddish grey. There is but little difference in the appearance of the sexes after they have attained maturity, and females are often found as beautifully marked as the male. The young are recognisable by a white spot upon the throat.

In the South of France, Spain, Algiers, and the Canary Islands, the Rock Sparrow is extremely common. It is found principally in mountainous districts, among old ruins, but is often met with near towns or villages, and in lonely valleys; it is by no means afraid of man, though it but rarely comes down into the streets, preferring to remain in the retreats it has chosen in cliffs or old towers, until compelled by hunger to seek its food in the adjacent fields. Above all other things it prizes liberty, and exhibits a foresight and prudence in its intercourse with our race that distinguishes it in a remarkable degree from the rest of its congeners. In its movements the Rock Sparrow bears a considerable resemblance to the Cross-bill; its flight is produced by a short, quick vibration of the wings, upon which it poises itself with a hovering motion before perching. It hops nimbly upon the ground, and while sitting assumes a defiant attitude, and wags its tail repeatedly. The voice of this bird might almost be termed a song, and is not unlike that of the Bullfinch, though by no means so agreeable or varied. The breeding season commences at the end of spring, or the beginning of summer. This species builds in holes in rocks, walls, or roofs, and with so much precaution are their retreats selected that it is extremely difficult to find a nest. The one we saw was constructed of straws and bits of cloth and linen, carelessly intermixed, and lined with feathers, hair, and wool. One of these little cradles is often used for years by the same birds, who make whatever improvements

are necessary as spring returns. The eggs, which are five in number, are larger than those of the generality of Sparrows, and of a greyish or dirty white, spotted and streaked with slate colour, the markings being most numerous at the broad end. We are unable to speak with certainty as to whether both parents brood, although they certainly co-operate in taking care of their progeny. When the young first leave the nest they associate in flocks, and fly about the country until the autumn, the parents, in the meantime, employing themselves in rearing a second and third family. Rock Sparrows subsist principally upon insects, seeds, and berries. In Spain and Germany they are often to be seen hopping through the dirt in the streets, and in the former country are brought to market spitted upon a stick. They are easily obtained by the help of nets or limed twigs, but are so wary that it is difficult to bring them down with a gun. In spite of its shyness this species is very well adapted for the cage, and will become so tame as to take its food out of the hand of its master.

The HAWFINCHES (*Coccothraustæ*) have usually been classed amongst the true Finches (*Fringillæ*), but in our opinion they should be regarded as the type of a peculiar family. The birds belonging to this group are recognisable by their compact body, long wings, comparatively short tail, short, powerful legs, and above all by their strong, rounded, thick, and pointed beak, furnished with a longitudinal groove within the upper mandible, behind which there is a transverse ridge, placed directly above a corresponding depression in the lower mandible, surrounded by a thickened margin. The plumage is rich, somewhat lax, and, though striking, not brightly coloured. The members of this group are found in all parts of the world—indeed, some species are extremely numerous, but our knowledge of their mode of life and habits is but limited.

THE GREEN GROSBEAK.

The GREEN GROSBEAK (*Chloris hortensis*), or GREENFINCH, as it is generally called, must be regarded as forming, as it were, a bond of connection between the present family and the Goldfinches. This bird has a strong conical beak, somewhat compressed at its edges, with a small ball-like elevation in the interior of the upper mandible. The feet are longer than those of the true Hawfinch, and the body elongated, but powerful. The plumage is principally of a green colour, that of the male being olive-green on the upper part of the body, the lower portion greenish yellow, the wings ash-grey, the tail black, the anterior quill-feathers of the wings and the five exterior tail-quills beautifully marked with yellow. The beak is of a yellowish flesh colour, and the eye brown. The plumage of the male is duller during the winter, owing to the grey with which the feathers are then bordered. The coat of the females never loses this sombre tint: the young are distinguishable by the dark streaks upon their bodies both above and below.

The Greenfinch inhabits the whole of Europe, and a large portion of Asia, with the exception of the most northerly countries: it is also numerous in Spain, but quite unknown in Siberia. Everywhere it is found about pasture-land, and such localities as are at no great distance from human habitations; it avoids all thickly-wooded places, and usually lives in pairs or small parties, the latter increasing into large flocks only during their passage from one country to another, at which times they associate freely with many other small birds of kindred habits. The Greenfinch generally selects some small coppice or garden for its residence, and passes the entire day in flitting from place to place, or upon the ground, whither it resorts in search of food. At night it seeks a shelter in the branches of some thickly-foliaged tree. Although clumsy in appearance it is a lively, active bird, light and easy in all its movements. Whilst perched the plumage is generally allowed to hang heavily round the body; but at times the bird stands erect, and lays its feathers so close and flat as to present an entirely different exterior. It hops with facility when upon the ground, and its course through the air is

light and undulating, owing to the manner in which it opens and closes its wings; it always hovers before alighting. When flying, these birds repeatedly utter their call, which, though a soft note, can be heard at a considerable distance; when employed as a cry of warning, it is accompanied by a gentle distinct whistle; on the approach of man they rise at once into the air, and thus render the task of shooting them both wearisome and difficult. Seeds of all kinds afford them nourishment, although they prefer those of an oily nature, such as rapeseed or linseed, only seeking food upon the trees when the ground is covered with snow. Fields of hemp offer an irresistible attraction to these little creatures—indeed, they seldom leave them until the crop is entirely destroyed; they are also at times very troublesome in fruit gardens, in spite of the services they render in clearing the trees of insects.



THE GREEN GROSBEAK (*Chloris hortensis*).

The Greenfinch breeds twice or even thrice during the year. Just before the time for pairing, the movements of the male are very animated; it sings constantly, as it soars rapidly into the air, raising its wings so high at each stroke that the tips almost touch each other. It thus sweeps backwards and forwards, turns round in circles, and then, slowly fluttering, descends to the spot from which it rose. Should another male venture to approach the little couple, he is immediately driven off by his happier rival, whilst the female remains quietly perched, watching the proceedings of her mate with great delight. The nest is built of such materials as are easily obtained, and usually placed on a forked branch, or close against the stem of a tree. This beautiful structure consists of an outer wall formed of straws, and fibres or fine roots, upon which is spread a layer of green moss or some similar material; the interior is lined with a warm blanket of wool, and the mossy exterior is always woven together with hair. The nest is of a round shape, its walls including rather more than the half of a sphere, being from two and a half to two and three-quarter inches wide at the top, and about two inches deep. The construction of this snug domicile devolves entirely upon the

female, her mate merely endeavouring to lighten her labours by his company. The first eggs are laid about the end of April, the second in June, and the third at the beginning of August; they are from four to six in number, and from nine to sixteen lines in length; the shape is but slightly oval, the shell thin, smooth, and of a blueish-white or silvery colour, marked more or less distinctly with light red spots, which form a kind of irregular wreath at the broadest end. The female sits upon her brood for about a fortnight, and is fed and tended during that time by her mate. Both parents, however, combine in the care of their progeny, feeding them at first with seeds softened in their crops, and afterwards with the same food in its natural state. These duties are but of short duration, the young soon quit the nest to go forth alone into the world, or fly in company with other Finches; nevertheless, they rejoin their parents as soon as the latter have fulfilled their work of incubation. The Greenfinch is much sought after on account of the delicacy of its flesh, but we cannot recommend it as suitable for domestication, as its song is very insignificant, and its disposition so quarrelsome that it will not live in peace with others of its race; on the other hand, we must mention that few species adapt themselves so readily to life in a cage.

THE HAWFINCH.

The HAWFINCH (*Coccothraustes vulgaris*) is easily distinguishable from the true Finches on account of the unusual heaviness of its shape: its length is seven inches, and breadth across the wings twelve inches; its tail two and a half inches long, and the wing three and three-quarter inches from the shoulder to the tip. The female is somewhat smaller. The plumage is greyish yellow upon the forepart of the head, and brownish yellow at the back and on the cheeks; the neck and throat ash-grey, the back light brown; the lower part of the body brownish grey, and the throat black; the wings black, with a white spot in their centre; the beak a dark blue in winter, and in summer grey, somewhat darker towards the tip. The eye is light grey, the foot light red. In the female all these colours are paler, and the black patch upon the throat smaller than in the male. In the young birds the feathers on the head are greyish yellow, those on the nape of the neck dirty brownish yellow, the back greyish brown, the lower part of the body greyish white, shading into reddish grey upon the throat and sides, and marked with blackish brown. The middle tail-feathers are very peculiar, becoming broader towards their ends, which are slightly forked.

These birds inhabit all the temperate portions of Europe and Asia, and are found in Sweden, also in the southern and western parts of Russia, and are amongst the summer visitors to Siberia. They fly about in large flocks, often reaching Algiers and Morocco in the course of their migrations; and generally prefer such mountainous or hilly countries as are well wooded, occasionally frequenting fruit and vegetable gardens. During the summer each little pair settles in a retired spot, selecting such districts as are at no great distance from a cherry orchard, and passing the night perched close together upon the twigs of some thickly-foliaged tree. The Hawfinch, as its shape would lead us to suppose, is very heavy and inactive, every change of placè being apparently the subject of lengthy consideration; even if alarmed, it only flies a few paces, immediately returning to the same spot; its movements among the branches are rather more active, but its little legs seem hardly able to support its body when upon the ground. Its flight is swift, undulatory, and noisy, owing to the rapid motion of its wings; it usually hovers before perching. Despite the clumsy appearance of this bird, it is extremely cunning and prudent, easily distinguishing a friend from a foe, and taking every precaution for its own safety. At the approach of danger it conceals itself so artfully among the foliage as to render discovery almost impossible; at other times it will perch on the topmost branches in order to observe the movements of an enemy—indeed, we ourselves endeavoured some years ago to capture one of these wary little creatures with the help of some favourite seed, but eight days passed before we

were successful, as the use of our gun appeared to be quite understood by the intended victim. These birds are fond of beech-nuts and cherries, preferring the latter solely on account of the kernels; in order to obtain which, the cherry is bitten off and its stone separated from the fleshy part, the latter being rejected. The fruit stones are cracked with such force and noise that the process may be heard at thirty paces from the tree, and the kernel is then extracted and swallowed. When fruit is scarce the Hawfinch is compelled to seek its food upon the ground, occasionally doing great damage amongst our seeds. In winter it subsists almost entirely upon the fruit of the hawthorn and other stone fruits and berries, from the latter of which it extracts the seeds as its favourite portion; it also consumes various kinds of insects, such as beetles and their larvæ, in great numbers, and will even catch Cockchafers (*Melolontha*) when upon the wing, and devour them after throwing away the legs and elytra. One or two broods are produced during the year, from about May to July, each pair taking possession of a little district which no other bird is permitted to approach, the male keeping constant watch for intruders from the top of his tree, or detecting them by short flights in the vicinity of his nest. His song is a disagreeable, sharp, whirring noise, which we may hope affords greater pleasure to his mate than it does to us, for her little partner is most indefatigable in his efforts to entertain her with his voice, often singing for hours together, accompanying his notes with rapid and varied gesticulations. The nest, which is easily recognised from its unusual width, is built of twigs and straws, lined with softer materials, firmly bound together with hair, and though by no means elaborately constructed, may be classed amongst the number of well-built nests; it is usually placed upon a thin branch, extreme care being taken to ensure its concealment. The eggs, three or five in number, are an inch long, of a dirty greenish or yellowish colour, marked with various shades of brown or grey. The female sits during the greatest part of the day, but is relieved for a short time about noon, when her mate takes his place upon the eggs. The young are tended by both parents for many weeks after they are hatched, as it is long before their beaks are capable of cracking the cherry-stones from which they derive the principal part of their food. The serious injury done by this species in orchards explains the extreme aversion in which it is held; one family alone will completely clear a tree of its fruit in an incredibly short time, and as long as a single cherry is left the destroyers will return, in despite of all the noises made in the hope of driving them from the spot. The gun affords the only means of scaring them, and even to its sound they soon become accustomed. Few birds are so pertinaciously and constantly pursued, and yet, thanks to their cunning, they are more than a match for their numerous enemies.

Attempts to domesticate the Cherry Hawfinch usually prove unsuccessful, as its formidable beak and quarrelsome habits render it dangerous to its companions; it has even been known to eat its own young when in captivity.

THE EVENING CHERRY HAWFINCH.

The EVENING CHERRY HAWFINCH, or SUGAR-BIRD (*Hesperiphona vespertina*), (so called on the authority of Cooper, who tells us that its song is only heard in the evening twilight), is the most beautiful species belonging to this family. It inhabits the almost unexplored northern parts of North America. The SUGAR-BIRD, as it is called by the Indians, is from eight to eight and a half inches long, three inches of which belong to the tail; the wing measures four and two-third inches from the shoulder to the tip. In the male bird the top of the head, wings, and tail are deep black, the line over the eyes, the middle of the back, lower part of the body, and under wing and tail covers, being of a bright yellow. The nape of the neck, sides of head, throat, and back of the neck, together with a portion of the back and breast, are dark olive brown, the sides of the shoulders yellow, with a greenish gloss, the quills of a dazzling whiteness at the tip—all these various colours being so blended

as greatly to enhance the beauty of the whole coat. The female is without the yellow line upon the head and the white spot upon the hinder quills; the other feathers are paler and greyer in their tints; some of the wing-feathers are tipped with white.

We learn from Townsend that the Evening Hawfinches are very numerous in the pine forests of Columbia, and so tame as to become an easy prey. Their song, which is popularly supposed to be only heard in the twilight, may in favourable localities be distinguished during the entire day, but as soon as night approaches they withdraw to the tree tops, and do not stir again till morning dawns. They seem to be of a social disposition, and are rarely seen living alone. They feed principally upon the seeds of pine cones, but likewise consume the larvæ of large black ants in great quantities. Their cry when in search of food has a somewhat screeching sound; the actual song commences about noon; this latter is a most dismal performance, and its tones are so pitiful that the bird itself seems to feel their influence, and pauses from time to time as though overcome by its own melancholy music, recommencing, however, very shortly, but with the same result as before. Nothing further is known as to the habits of this beautiful bird, which may be reckoned among the greatest rarities in our collections.

THE LARGE-BEAKED HAWFINCH.

The LARGE-BEAKED HAWFINCH (*Geospiza magnirostris*) is a very remarkable species, inhabiting the Galapagos Islands, and is at once distinguishable by its enormous beak and short tail. The plumage of the old male is raven black, that of the female brown; the head is horn colour, and the feet dusky. These birds spend the greatest part of the day in searching for food upon the ground, and Darwin mentions having seen one of them riding fearlessly upon the back of a lizard.

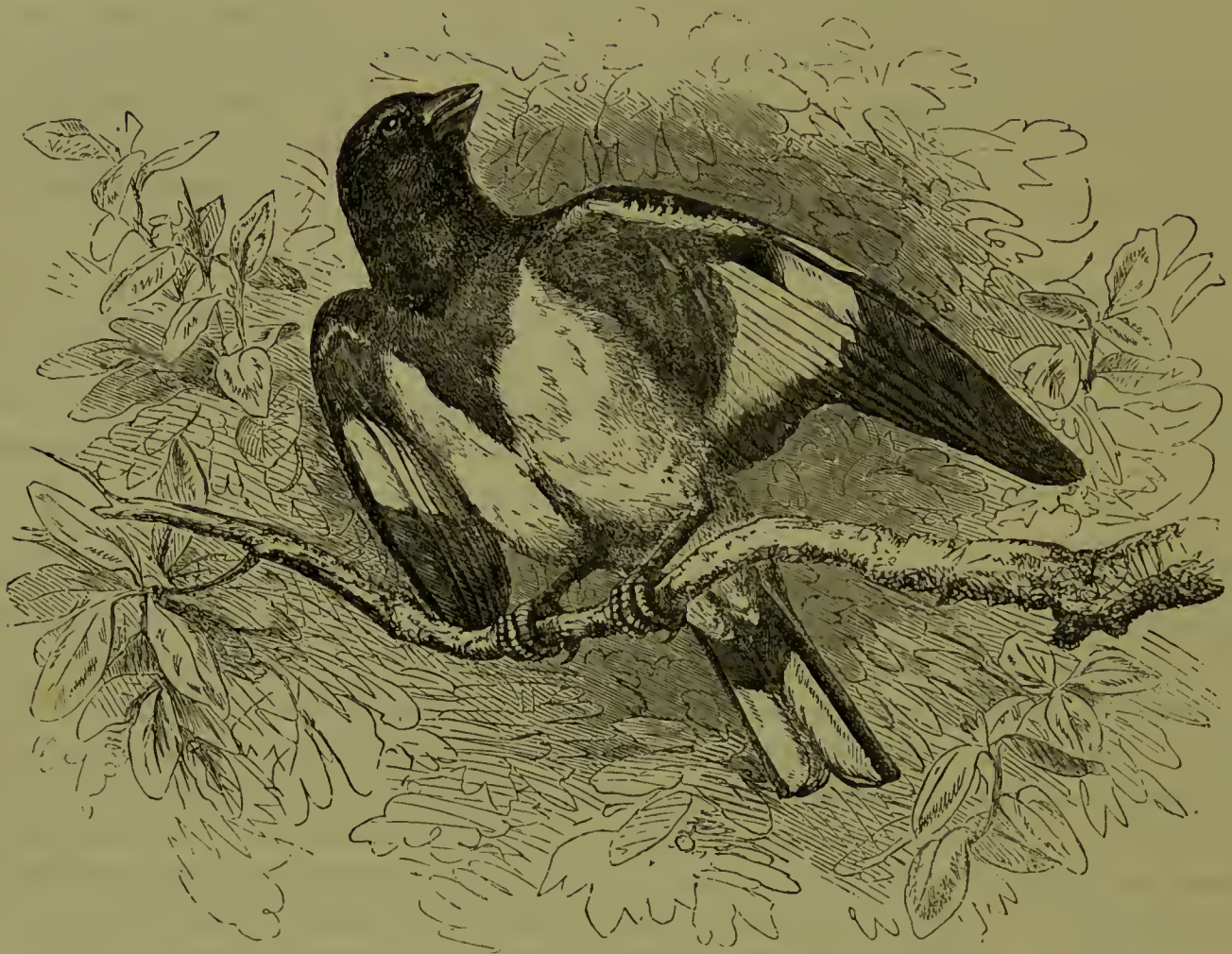
The PARROT FINCHES (*Pityli*) are now generally included amongst the *Conirostres*, and associated with the Hawfinches. They are known by their short wings, long tail, and peculiar beak, which is very strong, thick, and bulging, the edge being more or less compressed, and slightly angular. The first quill is always very short, and the third and fourth usually the longest. The wings are powerful, the tarsus high, and the toes of moderate length. The plumage is thick, soft, and entirely without metallic brilliancy. In colour it is usually grey or greenish grey, occasionally, but very rarely, marked with reddish yellow, black, or some bright colour. South America is the true habitat of these birds, which are seldom found in the northern parts of the Western Hemisphere. They are for the most part incapable of song, although some few are highly gifted in this respect. In their general habits they resemble the Hawfinches, and, like them, subsist upon seeds, berries, and insects.

THE ROSE-BREASTED HAWFINCH.

The ROSE-BREASTED HAWFINCH (*Coccothraupis ludoviciana*) is an American bird, equally remarkable for its beauty of plumage and sweetness of song. It is about seven inches long and eleven inches across; the wing measures three inches, and the tail rather more than two. The body is compact, the wings broad and of moderate length; the tail comparatively short and somewhat rounded; the beak short, strong, pointed, and almost conical; the upper mandible slightly hooked. The plumage is soft, brilliant, and very striking in its colours. The entire head, as well as the upper part and nape of the neck, back, wings, and tail is glossy black; the first row of feathers on the wing-covers and the tips of those on the second row are white, as are the roots of the primary quills, the wings being thus bordered by a double band of white. The inner web of the three exterior tail-feathers is also white, and the sides of the breast, under part of the body, lower portion of the neck, and middle of the breast, of a magnificent carmine red, the latter colour being also visible upon the lower wing-covers. The beak is whitish, the eyes are brown, and the feet greyish brown. The plumage of the female is

olive grey, spotted with dark brown, each individual feather being marked in the middle with the same colour. Over the head runs a yellow stripe, spotted and edged with dark brown; the eyes are surrounded by a white line; the wings and tail are brown, the lower portions of both having a yellowish shade; the former are bordered by two light lines, which are much narrower than in the male. The neck, breast, and sides are marked with dark brown, and the lower wing-covers shaded with rose colour.

Audubon tells us that he frequently observed these magnificent birds in some parts of Louisiana, Kentucky, and Cincinnati, during the month of March, as they passed over the country in the course "



THE ROSE-BREADED HAWFINCH (*Coccothraustes ludoviciana*).

of their migrations. Pennsylvania, New York, and other States lying eastward, are likewise often visited by them; but they are rarely seen in Labrador or on the coasts of Georgia, or Carolina, although they inhabit the mountains of those regions. They are generally numerous near the banks of a river, and large parties of them frequent the neighbourhood of Lakes Ontario and Erie. When in flight, these beautiful Finches rise high into the air with violent and very decided strokes of the wings. The call-note is uttered whilst flying, and ceases as soon as the bird has alighted upon a tree-top, where it remains perched erect and motionless for a few minutes, and then seeks shelter in some retired and shady spot. Many varieties of seeds, buds, and tender shoots form their principal food, and they are in the habit of seizing insects while on the wing. The nest, which is built chiefly of twigs and leaves, lined with hair or delicate fibres, is placed at variable distances from the ground, such localities being preferred as are in the vicinity of water. There is but one brood during the year, and both parents co-operate in the duties of incubation. The young are at first fed upon insects, and at a later period on seeds, softened in the crops of the parent birds; they do not attain their full beauty

of plumage until three years old. The song of the Rose-breasted Hawfinch is rich and pleasing. Nuttall tells us that in fine weather it will sing during the whole night, pouring out floods of song as varied and enchanting as those of the Nightingale, the little songster appearing to manifest the greatest delight at its own performance of strains that are alternately plaintive, gay, and tender. The Mocking-bird is the only American species that can bear comparison with it, so that its vocal powers, combined with its great beauty and the ease with which it is tamed, render it one of the most valuable birds of its size for purposes of domestication.

THE CARDINAL GROSBEEK.

The CARDINAL or TUFTED GROSBEEK (*Cardinalis Virginianus*) is closely allied to the species we have just described, as is plainly indicated by its compact body, short wings, graduated tail, and upright attitude. The length of the Cardinal is about eight inches, its breadth rather more than eleven inches, the wing, from shoulder to tip, three inches, and the tail three and a half inches. The soft and glossy plumage of the male is very beautiful, though almost uniform in its tints, the prevailing colour being dark red; the head is scarlet, and the face and throat deep black; the inner web of the wing is light brown, the shafts being of a darker shade, the beak bright red, the eyes dark greyish brown, the feet pale brown, shaded with greyish blue. In the female the tints are paler than those of her mate, and the tuft shorter; the back of the head, nape of the neck, and upper part of the back are greyish brown; the forehead, eyebrows, and tuft deep red; the wings dark brownish red. The individual quills are bordered with greyish brown, the lower part of the body is greenish brown, the breast and middle of the body of a reddish hue, and the beak pale red.

The Cardinal is found in nearly all parts of North America, inhabiting the Southern States in large numbers; but, we believe, is entirely unknown in the extreme north of that continent. It prefers such districts as are near the coast, and during mild seasons will remain for years together in the same locality; but should extreme cold set in, it at once changes its abode for a more southern region. Its life is passed upon the trees, from which it makes short excursions over the neighbouring country. Should food be scarce in its favourite woods, it visits fields and gardens, and is occasionally met with in the villages, where it receives a hearty welcome on account of its brilliant plumage and delightful song. In the summer time these birds may be seen in pairs; in winter they associate in small parties, living on very friendly terms with many other species, and constantly frequenting farmyards, where their strong beaks are of the greatest service to them, enabling them to feed upon the various kinds of corn scattered over the ground; at night they sleep upon a thickly-foliaged tree, and thus survive the winter months. They are remarkably restless, and rarely remain longer than a minute in one position; their flight is abrupt, rapid, and noisy, the movements of their wings being accompanied by a constant opening and closing of the tail; they seldom fly to any great distance, and hop nimbly, either upon the ground or in the trees. Should the winter prove severe, the Cardinal journeys southward in search of a milder climate, returning about March, in company with other migratory birds. Audubon tells us that these journeys are accomplished in some measure *on foot*, the little creature hopping from one bush to another, and flying over more considerable distances. The males return some days previous to their female companions; shortly after their re-appearance the pairing season commences, and is always inaugurated by violent disputes and battles between the males, who chase each other from place to place with bitter animosity, and then return to pour forth a song of triumph in the ear of their mates, to whom they are most tenderly attached; bushes or trees in the vicinity of a river or farmyard are the localities generally preferred for building purposes, and the nest is frequently placed within a few yards of that of a Mocking-bird. In the Northern States the female lays but once during the year,

but further south three broods are by no means unusual, each consisting of from four to six eggs of a dirty white colour, marked with olive brown. The food of the Cardinal consists of corn, seed, and various berries; during spring it devours the berries of the sugar-maple in large quantities, and in summer wages continual war against beetles, butterflies, and caterpillars, committing great depredations in the gardens, attacking the fruit and destroying the bees. American naturalists are loud in their praises of the song of this bird, to which they give the name of "the Virginian Nightingale," asserting that its note sare fully equal to those of its European namesake, both in purity and variety of tone. Audubon describes its song as resembling the sound of a flageolet, commencing in a loud clear key, and gradually sinking until scarcely audible. It is during the breeding season that these notes are heard in their greatest perfection, the little songster appearing to feel the full beauty of its own performance, as it inflates its breast, spreads its tail, and opens its wings, turning from right to left as though to attract attention to the wonderful sounds it is producing. Again and again these strains are renewed, the pretty vocalist only pausing from sheer exhaustion, sometimes continuing its song almost without intermission from sunrise to sunset, occasionally accompanied by the less pretentious effort of its mate. European naturalists are by no means so enthusiastic in their notices of this bird, and pronounce its song to be more striking than beautiful. The Cardinal is easily reared in captivity, but it is so quarrelsome as to be dangerous to any companions confined in the same cage.

THE DOMINICAN FINCH.

The DOMINICAN FINCH (*Paroaria dominicana*) is the species we shall select as the type of the group *Paroaria*, or Grey Finches, so called from the leaden colour of a portion of their plumage, the entire back being grey, the sides of the belly white, and the head usually red. This bird is slender in shape, with pointed wings that reach almost to the middle of the rounded tail; the beak is straight and thick, but slightly hooked at its tip, the edge somewhat compressed, with a slight ridge near the centre; the legs are powerful and of moderate length. The Dominican Finch is about six and a half inches long and ten and a half inches across; the wing about three and a half inches long and the tail three inches. The plumage of the nape of the neck, back, wings, and tail is of a dark slate colour; the lower part of the body white, marked upon the sides of the breast with a greyish shade; the head, gorge, and fore part of the neck are, with the exception of the black ear-covers, of a deep blood red, the back of the neck being separated from the grey nape by a white band. The upper mandible is of a blackish grey, the lower one of a whitish tint; the eye is brown, and the legs a brownish flesh colour. There is but little difference between the plumage of the male and female.

These beautiful birds inhabit the northern part of Brazil, and are found principally about Bahia, Para, and the river Amazon, where, like most of their tribe, they live in pairs, on bushes that border the large forests; but are by no means numerous. They are very quiet and simple in their habits, and will live for a considerable time in a cage. Their song is short and twittering, and the call-note clear.

THE TINY FINCH.

The TINY FINCH, or LITTLE PARSON (*Gyrinorhyncha*, or *Sporophila minuta*), is a small species, measuring not more than five inches in its entire length. The upper part of the body of the male is black, and the lower portion a rusty red. The back of the female resembles that of her mate, but the breast is reddish brown, and the belly a rusty yellow; the young are like their mother.

Like its congeners, this bird is found principally upon the grassy plains of Brazil, where it lives upon various kinds of seeds. It is a smart, pleasing little creature, with an agreeable voice, and on these accounts is much valued by the Brazilians, in spite of the damage it occasionally does to their

crops. The Tiny Finch is distinguished by its small beak, hooked at the tip, resembling that of the Bullfinch in shape; by its comparatively long wings, short tail, and by the black shades that predominate in the upper portion of the plumage of the male bird.

THE DIADEM GROSBEAK.

The DIADEM GROSBEAK (*Catamblyrhynchus diadematus*), another member of this family, inhabits Santa Fé de Bogota. Its length is five and a half inches, and the wing measures two inches and a half. The beak of this bird is very thick, and not unlike that of the Bullfinch in shape, the upper mandible being but slightly hooked; the wings are rounded, the tail somewhat shortened at its sides, and the feet very strong. The bridles, cheeks, sides of the neck, and whole of the lower part of the body, are of a chestnut brown; the brow and front of the head orange colour; the back of the head and nape black, and the remainder of the upper part of the body blueish grey; the wings and tail are brownish, the former being edged with blueish grey. The beak is black, as is a narrow streak upon the cheeks, and the feet are brown. We are totally unacquainted with the habits of this species.

THE ASHY-BLUE PARROT FINCH.

The ASHY-BLUE PARROT FINCH (*Pitylus cœrulescens*) is a large bird, about nine inches long and twelve in breadth, the wings and tail measuring about four inches. Its beak is thick, arched, and compressed at the margins, terminating at its tip in an abrupt hook. The wings are short, and when closed do not extend beyond the upper tail-covers; the two first quills are considerably shorter than the third; the tail is very long, and its three exterior quills much shorter than the six that form the middle portion; the small delicate legs seem quite disproportioned to the size of the beak. The plumage of both sexes is soft, but by no means thick; that of the male being a deep blackish slate colour shaded with indigo blue, and the mantle and wings of a blueish green. The face stripes, region of the eyes, ear-covers, front and sides of neck, chin, throat, and upper part of the breast, are deep black, the wing and tail feathers black, the former white on the anterior border; the lower wing-covers are pure white, the eye is greyish brown, the beak of a reddish colour, and of a deeper shade at its tip; the legs are brownish black. In the plumage of the female the bright colours are not so vivid on the upper part of the body; the black portion of the throat is not so deep in its hue, and the entire coat appears duller; the beak is of a pale red. The young male is known by the light yellow coloured beak, and by the inferior purity of its tints.

This species is not frequently met with. It inhabits South America, and usually lives in pairs, avoiding the interior of forests, and delighting to disport itself in the sunny meadows of its native land. When perched in the brushwood, the contrast between its bright red beak and dark coat and the green foliage renders it a conspicuous object in the landscape. The call is a chirping note, not unlike that of the Hawfinch.

THE MASKED PARROT FINCH.

The MASKED PARROT FINCH (*Caryothraustes Brasiliensis*) is closely related to the last-mentioned bird. The formation of the beak is very similar to that above described, but it is somewhat less arched, and not quite so thick. The wings, which are comparatively long, reach when folded half way down the remarkably short tail; the latter is slightly rounded, and its exterior quills but little shorter than the rest; the legs are weak, and the very thick plumage beautifully coloured. In size this species resembles the common Hawfinch, being from six and a half to seven inches long; the wings measure rather more than three inches, and the tail three inches. The entire face is coal black; the brow, region of the eye, top of the head, sides of the neck, lower part of the throat, and middle of

the belly, bright green ; the breast and sides of the body are shaded with a darker tint. The mantle is olive green, the wing-feathers greyish brown, with a border of green edged with yellow. The two middle feathers of the tail are almost entirely olive green, the rest greyish green, with a yellowish shade upon the inner web ; the outer web is olive green. The eye is brown, the beak a brilliant black, somewhat paler towards the base, which in the old birds is of a leaden hue ; the legs are reddish brown.



THE DOMINICAN FINCH (*Paroaria dominicana*).

We know little or nothing of this bird beyond the fact that it inhabits some parts of Brazil, and is generally found in small flocks in the vicinity of woods and forests, or occasionally living solitarily or in pairs.

THE HABIAS.

UNDER the name of HABIAS (*Saltator*) we shall include a group of South American Parrot Finches that are distinguished by their thick beaks, short wings, and long tails, the latter being rounded at the tip, as are the wings. The first quill of the latter is much shorter than the rest, the legs are very powerful, and the beak, which is black, high, and compressed at its edge, is almost straight at the tip. The upper part of the back and wings are of an olive green.

THE CAPI.

The CAPI (*Saltator coerulescens*) is nearly of the same size as our English Blackbird, being about eight inches long and twelve broad ; the wing measures four inches from the shoulder to the tip, and the tail three and a half inches. The plumage upon the nape, back, and wings is blueish

grey, shaded with yellowish brown; the bridles and a line over the eyes and throat are white, the latter being divided from the chin by a black streak; the upper part of the breast is grey, and the lower portion of the body of a paler shade; the wings and inner web of the wings are a rusty yellow, spotted with grey; the tail a dark slate colour, the beak brownish grey, and the feet a dusky black.

These birds are found in considerable numbers in the southern parts of Brazil, where they frequent the trees, avoiding deep forests, and at times do considerable damage in the gardens; they are usually seen in pairs or small parties, and are by no means afraid of man, in the vicinity of whose dwellings they are constantly to be met with. They fly slowly and with difficulty, rarely coming to the ground, on which their movements are neither animated nor easy; their life is spent principally in



THE RARITA, OR RARA (*Phytotoma Rara*).

the midst of the trees or bushes, from whence they fly forth to procure the seeds, buds, snails, or insects that constitute their principal food, though they occasionally eat the strips of meat that have been laid to dry in the fields. The song of the Capi is extremely insignificant, and except during the breeding season scarcely deserves to be called by that name. The nest is built about the month of November; it is carelessly formed of moss, roots and twigs of various sizes, a high thick branch affording the favourite locality for its construction. The eggs, two or three in number, are greenish blue, marked at the broad end with a variety of spots and lines. Little is known of the habits of these birds beyond what we are told by Azara, who kept one of them caged for some time in order to observe its conduct; it would take almost any food that was given to it, but, strangely enough, ate like a quadruped, taking large pieces into its beak and chewing them.

The PLANT CUTTERS (*Phytotoma*) are a very remarkable race of birds, closely resembling the Habias in their general appearance and habits, but differing from them in the construction of their beaks, which are furnished at their edge with a saw-like apparatus, that enables them to cut down the

various plants upon which they feed. Most marvellous tales have been told by early writers of the habits of these destroyers, and although much has been proved to be fabulous, still there can be no question that the damage done by them to the crops in their native land is both extensive and serious, so that they are proportionably dreaded and persecuted by its inhabitants.

THE RARITA.

The RARITA, or RARA (*Phytotoma Rara*), the most redoubtable species, has been fully described by Molina, who named it from the sound of its cry. Its length is six and a half inches, its breadth eleven inches, the wing measures three and one-third, and the tail two and a quarter inches. The plumage of both sexes is very similar: the upper part of the body is of a dark olive green, each feather having a black shaft and a greenish yellow border; the lower part of the body is of a paler shade, with the same dark markings along the shafts of the feathers; the brow is rust colour, becoming darker towards the top of the head; the throat and lower part of the body yellow; the feathers on the upper part of the breast and tail are of a rusty red at the upper portion, becoming darker towards the roots; the wings almost black, edged with two white borders; the tail-feathers are dark at the tip and on the outer web, and the inner web rust red. The colours of the female are paler and greyer than those of her mate; the beak and feet a blackish grey, and the eye bright red. D'Orbigny mentions two other species, one of which he has called the AZARA, in honour of that naturalist, and the other the BOLIVIAN PLANT-MOWER.

From the above-mentioned writer we learn that these birds inhabit the temperate zone, and are rarely found beyond such parts of the country as are cultivated by man; they constantly frequent vineyards, fields, and gardens in company with Habias, doing terrible damage by breaking the plants, cutting off the young shoots, and eating the fruits, continuing this work of destruction throughout the whole year. They are rarely or never seen upon the ground, but fly very low when in search of food, seldom passing any length of time upon the wing. Their cry is extremely disagreeable, resembling the grating sound of a saw. Another author from whom we quote, bears testimony to the terrible mischief wrought by these bold and formidable marauders, who are all the more to be feared as they carry on their devastations in the twilight of the early morning and evening, at which times they are constantly occupied in sawing down young plants close to the ground, working until their beaks are green from the sap that flows from the stalks at which they labour; indeed, were this species as numerous as other Finches, no field could escape their destructive propensities. The capture of these birds is attended with but little difficulty, as they perch during the day upon trees or fences, and testify but little alarm at the approach of man. The only information we have as to their breeding is that the eggs are white, spotted with red.

The TANGARAS are a very peculiar and numerous race of Finches, inhabiting America, and distinguished by the variety and beauty of their plumage. In size they resemble our Sparrows; their beak is always conical, and the upper mandible furnished with a kind of notch near its extremity, which terminates in a slight hook. The wings and tail are of moderate length, and the thick plumage of the male brilliantly dyed with blue, green, or red, intermixed with black and white. The coat of the female is much less brightly coloured.

The tropics must be regarded as the real habitat of these glowing birds, though we find them spread over the greater part of the American continent; some species frequenting woods, whilst others prefer to perch nearer the ground, upon low trees or bushes. Despite the great beauty of their plumage, they are by no means favourites in the countries they inhabit, owing to the damage done by them to fields and plantations; indeed, their exquisite colouring is their only merit, as their

disposition is very uninteresting, and they are almost without any kind of song. Berries and various kinds of fruit constitute their principal food, many eat insects, and some species subsist entirely upon dry seeds.

As our space only permits us to mention a few of these birds, we will first select the TANGARAS PROPER, as being the largest of this family. The beak of the True Tangaras is compressed and slightly bent, conical, and almost straight at the tip; the wings are pointed, and of moderate length; the tail is long, and broad at the end, which is somewhat forked, and of a green or blue colour; the plumage presents but little variety in species.

THE ORNATE TANGARA.

The ORNATE TANGARA (*Tangara ornata*) is four inches long, the tail measuring about three inches more, and the wing three inches from the shoulder to the tip. The plumage of the male is bright blue upon the head, neck, breast, and lower part of the body, with a greyish shade where the roots of the feathers are visible; the middle of the belly, legs, and rump are greenish grey; the back is of a dirty greenish grey, shaded with blue; the lesser wing-covers are blue at the shoulder; the smallest feathers of these parts are lemon yellow, and the remainder of the wing greyish brown, each feather being bordered with green. The tail is a greyish brown, its middle portion shaded with green, the rest only edged with that colour. All such parts as are blue in that of her mate are in the plumage of the female greyish green, shaded with blue; the green and yellow markings of the wings being much paler and more indistinct.

All the countries from the Amazon to Guiana, and the woods upon the coast of Brazil, afford a home to these birds; they seem to prefer the shelter of the plantations that abound in these districts to the sombre retreat of large forests, and pass their active, cheerful little lives in the immediate neighbourhood of man, to whose orange and lemon trees they are at once ornaments and formidable enemies. Except during the pairing season these Tangaras have no song, but merely utter a simple and monotonous call-note. The nest is built upon a tree, and resembles that of a Greenfinch.

Our knowledge of the North American Tangaras is much more extensive. We shall confine ourselves, however, to the mention of two species belonging to the group denominated

FIRE TANGARAS (*Pyrranga*). The members of this group are slender, their wings long, pointed, and reaching almost to the middle of the rounded tail. Their beak is strong, conical, vaulted, and strongly compressed at the margins; the edges of the upper mandible are somewhat bent outwards, and jagged towards the middle portion, but straight near its extremity, where there is a scarcely perceptible notch. The plumage of these birds is thick and smooth, that of the male being generally red, that of the female yellow.

THE FLAX BIRD.

The FLAX BIRD (*Pyrranga rubra*) is the most numerous and best known of the two species we shall describe. Its length is six and a half inches, its breadth ten and a half inches, the wing being four inches long, and the tail two and a half inches. The coat of the male, when in its full beauty, is of a most magnificent scarlet, the upper portion of the feathers being of that colour, and white at their roots; the latter tint, however, is never visible during life, though very conspicuous after the bird has been stuffed. The wings and tail are of a brilliant black, affording a striking contrast to the glowing little body. Very shortly after the breeding season this plumage disappears, and is replaced by feathers

resembling in their hues the quiet dress of the female ; the upper part of the body being then of a greenish colour, and underneath of a pale yellow. This costume is followed after the moulting season by a third, when the male appears prettily spotted with bright red and green, and presents a most elegant appearance.

THE FIRE TANGARA.

The FIRE TANGARA, or SUMMER RED BIRD (*Pyrranga æstiva*), is larger than the rest of its congeners, measuring from six and three-quarters to seven and a quarter inches in length, and eleven across. The body is red, like that of the last-mentioned species, but the wings are of a reddish brown, and the whole plumage somewhat paler. The female is olive green, shaded with brown, the under part of the body being yellow, towards the middle shaded with red. Very old females are occasionally met with, resembling the male birds in their colours. The young are like the mother.

In their manners both these species of Fire Tangaras are much alike ; they inhabit the extensive forests of America, where they are found in pairs, living a very quiet and retired life, and generally perching upon the topmost branches of the trees. The Summer Tangara receives its name from the fact that it is only seen in the United States from May to September ; though far from numerous, it is well known all over the country, frequently making its appearance in the gardens and plantations, where it does considerable damage to fruit and flax. The scarlet species is generally seen as early as April, and leaves somewhat later than the Summer Tangara. The latter migrates by day, the former at night, the birds rarely consorting even on these occasions, and preserving their comparative isolation when flying through the length and breadth of the land. As to their habits, naturalists agree in telling us that they are quiet and monotonous ; but, whilst constantly deploring their deficiencies as birds of song, they cannot speak too warmly of their great beauty and of the striking contrast their red plumage affords to the surrounding trees. Their flight is smooth and gliding ; but they seldom descend to seek their food upon the ground ; their movements among the branches are slow, and the trifling amount of animation of which they appear capable is expressed by occasionally flapping their wings, or uttering their call, which consists of only two notes. They live principally upon insects, catching them when upon the wing, and Wilson mentions having found Tangaras whose stomachs were entirely filled with the remains of bees. The nest, which is clumsy in its construction, is usually built upon a forked branch, no care being taken for its concealment. The Prince von Wied mentions having seen a brooding female that remained sitting quite undisturbed by his approach, even when he ventured quite close to the young family ; indeed, so little precaution is taken to ensure safety, that the nests are often constructed by the roadside, and so lightly fastened to the branches upon which they are built as to be easily shaken from their place ; dry roots and straw generally form the outer wall, the interior is lined with fine grass. The eggs, four or five in number, are light blue, or dark greenish blue, those of the Scarlet Tangara being spotted with different shades of purple. Both sexes unite in the duties of incubation, sitting upon the brood for the space of a fortnight, and feeding the nestlings principally upon insects. By the beginning of June the young birds are strong enough to fly about the country, accompanying their parents until the season for migration arrives. Wilson mentions a pretty instance that came under his own notice of the attachment of these beautiful creatures to their young. On one occasion, he tells us, he caught a young Scarlet Tangara that had been a few days out of the nest, and carried it to a distance of about half a mile, when he placed it in a cage near the nest of a Yellow Bird, thinking that as the occupant had a family of her own, she might take pity on the stranger. In this hope he was deceived, its plaintive cries being entirely disregarded, nor could it be persuaded to take food from his hand. He had almost decided on taking the poor bird to the place whence it came, when towards evening a Scarlet Tangara was seen flying round the cage and making every effort to obtain admission ; not succeeding in its attempts, the bird

flew away, speedily returning with a beakful of food ; this continued till sunset, when it perched for the night upon a neighbouring tree. At break of day its ministrations recommenced in spite of all the enmity testified by its neighbour the Yellow Bird, who tried to drive it from the spot. Several days and nights were spent in this manner, the parent urging the young one by every tender persuasion of which it was capable to leave its prison and accompany her. At last the cage was opened, and the little captive permitted to rejoin its mother, who received it with loud demonstrations of affection and delight. The Tangara is but rarely seen in Europe, and though easily reared upon fruit and seeds, is by no means adapted for domestication.

Under the name of CALLISTES (*Calliste*) we include a considerable number of small birds, somewhat resembling the Siskin and Linnet in appearance, but much more varied and brilliant in their hues. Their beak is comparatively short, high, and slender, its edges compressed, the upper mandible furnished with a horizontal ridge, and the tips slightly bent. The eyelids are surrounded by a circle of small flat feathers ; the wings and tail are of moderate length, the latter slightly forked and covered with small feathers ; the legs are delicate, the tarsus high, and the toes short. The plumage of the Callistes is variegated, the tints on the coat of the male being more distinct and pure than in the female ; the young resemble the parents, but are paler in colour. These birds inhabit the wooded districts of Brazil, and are distinguished from other Tangaras by the fact that they subsist entirely upon various kinds of seed.

THE RED-NECKED CALLISTE.

The RED-NECKED CALLISTE (*Calliste festiva*), the most prominent member of this group, is a small bird, five and a half inches long, the wing measures two and a half inches, and the tail two inches. Its shape is slender and elegant, the feathers extremely soft and delicate, and the coloration of the plumage exquisite ; the front of the brow, cheek-stripes, base of the under mandible, chin, and upper part of the beak, are black ; the upper portion of the forehead and small feathers round the eye, a beautiful greenish blue ; the rest of the head is a brilliant ultramarine. Around the eyes and under the lower mandible runs a broad line of splendid cinnabar red, which passes over the cheeks, the region of the ear, sides of the throat and nape. The rest of the plumage is principally of a bright glossy green, shading into yellow on the hinder part of the body ; the wings are brownish black, the feathers being edged with a broad green line, and the shoulder marked with a streak of orange. The feathers of the tail resemble those of the wings, but are shaded with green ; the beak is deep black, the feet slate colour or reddish brown. The coat of the female resembles that of her mate ; the colours, however, are somewhat paler, and a portion of the back is spotted with black.

These birds, which are by no means numerous, inhabit the woods upon the eastern coast of Brazil, and are occasionally found in Guiana. We are entirely ignorant as to their life and habits.

The CALLOUS-BEAKED TANGARAS (*Ramphocelus*) are recognisable by their thick high beaks, that have the appearance of being swollen at the base, while the lower mandible is covered with peculiar coloured callosities, that extend as far as the angle of the mouth. The edge of the upper mandible is turned inwards, and its tip bent, presenting a very perceptible notch. The short wings do not extend as far as the middle of the tail, which is extremely long and abruptly graduated at the sides. The legs are small, the tarsi thick, and the claws hooked. The plumage of the male is much more brilliant and thicker than that of his mate.

THE TAPIRANGA.

The TAPIRANGA, or TIJÉ (*Ramphocelus Brasilianus*), the only species of this group to which we shall allude, is seven inches in length, and seven inches across the wings; the wings and tail each measure three inches. The female is somewhat smaller. The plumage of the male is thick and harsh, and of a light blood-red; the wings and tail are brownish black, becoming lighter as the bird advances in age; the feathers of the upper wing-covers are bordered with blood-red, the under covers being black, marked with white, the feet deep brownish grey. The fore part of the back and throat of the female are of a quiet greyish brown; the breast and entire lower portion of the body are a light reddish brown, the upper tail-covers tinged with blood-red, the wings greyish brown, edged with a paler shade, and the tail-feathers blackish brown. The beak of this species is without callosities, and the eyes pale red. The young male and female are alike in colour, but the plumage of the former is of a somewhat deeper shade, and there is a white skin on the lower mandible. In both birds the upper tail-covers are blood-red. During the time that the young are acquiring the red feathers their plumage has the appearance of being spotted.

The Tapirangas inhabit the Brazils, and there frequent such localities as are at no great distance from the banks of a river, or from marshy ground covered with reeds. In their native land these beautiful birds are very common. Except during the breeding season, their time is passed in flying about in small flocks, in search of berries and fruit, and they exhibit a very cunning preference for the finest and more valued kinds, such as oranges and citrons, to which they do great damage. Young and old are alike engaged in these foraging parties, and are only distinguishable by their cry, that of the old bird resembling the twitter of our Sparrows. In disposition this species is lively and restless, and by no means shy. The nest, which is placed upon the forked branch of a tree, is deep and semi-globular in shape, formed of moss, and delicately lined with fibres or blades of grass. The eggs, two in number, are of a beautiful sky-blue or apple-green, spotted with brown, and marked with black streaks at the broad end. The Tijé is unknown in mountainous regions.

The BUTCHER-BIRD TANGARAS (*Lanio*) are also recognisable by the formation of the beak, which is somewhat elongated; the upper mandible is hooked at its extremity, and possesses (what constitutes its greatest peculiarity) a strong tooth-like appendage situated near its apex. The wings are long, and the tail of moderate length, slightly forked.

THE BLACK-HEADED BUTCHER-BIRD TANGARA.

The BLACK-HEADED BUTCHER-BIRD TANGARA (*Lanio atricapillus*) is about five and a quarter inches long, and eight and a quarter across the wings; the tail measures two and a half inches, and the wings three inches. The plumage of the male is black upon the upper part of the body; the forehead, eyes, throat, and a line over the tail greenish brown, the under parts of a bright yellow, and the centre of the back and breast of a reddish shade; a white line passes over the wings. The coat of the female is greenish red, the head dark green, and the middle of the belly bright yellow.

These birds are numerous in Guiana, where they generally live in pairs upon the trees in plantations, or near the coast. D'Orbigny found them in small flocks, occupying the hot woods at the foot of the Bolivian Alps, and perching so high upon the branches as to render their capture difficult. Their food consists of seeds and the tender shoots of young plants.

The ORGANIST TANGARAS (*Euphonia*) constitute another group. These birds bear a strong family resemblance to the True Tangaras, from which they have been separated on account of their

possessing *two* tooth-like prominences behind the apex of the upper mandible. In their general habits, compact body, short tail, high tarsus, and short broad back, they seem closely allied to the MANAKINS (*Pipra*). They are small, thick-headed birds, with strong beaks, which are distinguished by the peculiarity mentioned above, and much compressed towards the tip. The wings are short, covered with narrow feathers, and do not reach beyond the root of the tail; their first three quills are of equal length, the tail is very short and narrow, and the individual tail-feathers rounded at their extremities. The plumage differs in the two sexes, the back of the male being of a blueish steel colour, inclining to green, and that of the female olive green; the lower parts of the body are brilliant yellow or light green. A most striking peculiarity in this species is the seeming absence of any proper stomach or gizzard, these being replaced by a simple spindle-shaped dilatation, resembling a crop, situated at the termination of the gullet.

The Organist Tangaras lead a solitary life, inhabiting the depths of forests, and living upon berries of various kinds; their nests are built upon thickly-foliaged trees or bushes; the eggs are very long, of a pale red colour, spotted with reddish brown at the broad end. Their voice is extremely pleasant and melodious, and capable of a great variety of notes. Our space does not permit us to mention more than one example of this group, and our readers must, therefore, take it for granted that all its other members are more or less similar in appearance and habits to the species we describe.

THE VIOLET ORGANIST.

The VIOLET ORGANIST, or GUTTARAMA (*Euphonia violacea*), the bird we select to represent its kindred, is four inches long, and seven inches broad; the wing measures two and a quarter inches, and the tail one and a half inches. In the male the brow and the whole of the lower part of the body are bright yellow, the upper parts, from the forehead downwards, of a blueish violet; the wing-covers are shaded with a pretty green, as are the edges of the quills, the inner border of the latter being white; the upper side of the tail is blueish green, its lower surface black, and the two exterior feathers white upon the inner web and shaft. The female is of a sad olive colour upon the back, and yellowish grey underneath; the wing and tail feathers are brownish grey. The young birds resemble the mother; the second coat of the young male is greyish blue, spotted with yellow on the lower parts of the body.

We are but little acquainted with the habits of this species, though it is frequently caged, and is in all respects an elegant, lively little creature, hopping and flying with great animation, and possessing a full and agreeable voice. The Guttaramas subsist chiefly on fruit, preferring that of the orange, banana, or guava trees, to which they do great damage. In Guiana they are also extremely troublesome by reason of the injury they do to the fields of rice, over which they sometimes fly in small flocks.

The BRIGHT-COATED FINCHES (*Amadinæ*), a group to which we shall next call attention, comprehends many brightly plumaged, compactly formed, small birds, inhabiting Africa, Southern Asia, and Australia. They are distinguished by the absence of a hook at the end of their somewhat thick beaks; their wings are of moderate length, their tail is short and graduated, the two middle feathers often extending far beyond the rest, and their legs are comparatively weak. The males are much more brilliantly coloured than their mates, although the latter are by no means deficient in this respect, so that their gay presence lends an indescribable charm to the districts they inhabit. The song of these beautiful Finches is by no means equal to their external gifts, nevertheless they seem anxious to atone for all deficiencies by the zeal and industry with which they pour forth their notes throughout the greatest part of the year; their voices are extremely varied, some having a curious kind of song,

that has the effect of being produced by ventriloquism. All parts of the country are frequented by these busy birds, who usually keep together in tolerably numerous parties. When flying, they dart along with the velocity of an arrow, beating the air rapidly with their wings—in short, whether upon the ground, hopping about among the bushes, or hanging like Titmice from the branches, they prove themselves at least the equals of any of their congeners. Their breeding season commences with the spring, though some species lay much later in the year; the brood consists of from three to six eggs, and the young are fed exclusively upon insects, which, together with a variety of seeds, constitute the food of the parent birds. The enemies of these pretty creatures are extremely



THE GUTTARAMA (*Euphonia violacea*).

numerous, man himself being first upon the list, in revenge for the mischief done to his fruit and corn. Some Falcons subsist entirely upon them, and a variety of other destroyers kill and devour them in large numbers.

THE BAND-BIRD.

The BAND-BIRD, or COLLARED FINCH (*Amadina fasciata*), well known in seaport towns, is the species we have selected for special description, as being a worthy representative of its race. Its beak is extremely strong, and nearly as high and broad as it is long; the upper mandible is somewhat flattened at its origin, and the ridge arched from the forehead; the lower mandible is very wide; the wings are of middle size, and the three first quills of nearly equal length; the tail is short, and rounded at its tip. The plumage is brown, spotted with a lighter shade, and prettily marked with black; the tail black, tipped with white. The entire length of this elegant little creature does not exceed five inches, the wing two and a quarter inches, and the tail one and three-quarter inches. The coat of the male bird is of a beautiful brown, darker upon the back, and lighter on the under part of the body,

its whole surface being either undulated, or the feathers bordered with black. Upon the breast some of the individual feathers are marked with a black spot that takes the shape of the letter V. The upper wing-covers are terminated by a greyish-red patch, thrown into strong relief by a black crescent that divides it from the rest of the feathers. The wings are brown, edged with a yellow shade, and the tail pale black, the under portion being grey, and the outer web of the exterior feathers white; the other tail-feathers, with the exception of the two middle ones, are entirely black. The male bird is further distinguished from its mate by a broad band of rich carmine round the throat, which passes along the lower part of its white face and neck. The eye is brown, as are the beak and legs.

These birds are very numerous in their native lands; they inhabit the continent of Africa from east to west, avoiding the actual desert and primitive forests, as not affording the grasses and plants on whose seeds they mainly rely for food. In their habits they are social, and may frequently be seen flying over the country in parties that include not merely their own species, but many varieties of their feathered relatives. These flocks will often alight close to the huts of the negroes, without the slightest danger of repulse; and pass the entire day in searching for food upon the ground. Should the busy foragers be disturbed at their work, they rise at once to take shelter in some neighbouring tree, where they while away the time by preening their feathers and singing, until the supposed danger is over, when they return to the spot from whence they were driven. If attacked by a bird of prey, the whole party takes refuge in some thickly-foliaged retreat, to which they also resort during the mid-day heat to enjoy a siesta, thus protecting themselves from the burning rays of the sun; later in the afternoon they are again busy in the search for food. The breeding season commences in September or October, the months which in Africa correspond to our European spring. In the countries watered by the Nile these birds have only to dread the attacks of Falcons or Sparrow Hawks, for the natives are content to frighten them from their fields of corn without wreaking further vengeance upon them. It is remarkable that during the whole period of our residence in Africa we never saw one of them in the huts of the natives, although the great numbers exported to various parts of the world come exclusively from the tract of country watered by the Gambia. Hundreds of these "Bengalees," as they are called, make the long sea voyage shut up together in a wooden cage, and but scantily provided with nourishment; yet, in spite of this treatment, and the deplorable condition in which they arrive, they speedily recover health and spirits, appearing most grateful for any kindness shown to them. Few birds are more attractive than this species, or better adapted for domestication; indeed, the mutual attachment of the little couples will bear comparison with that of the proverbially affectionate "Love Birds:" every labour and pleasure is equally shared, the male scarcely allowing himself time for a song, so busily is he occupied in cares for his pretty mate and her offspring. This amiable disposition is, however, by no means exhibited in reference to other males, the little husband doing battle with all intruders with such vigour and pertinacity as to render it quite impossible to keep more than one pair in a cage—at least, during the breeding season. The nest is melon-shaped, and provided with a hole at the side for an entrance; it is built of grass or straw, snugly lined with wool. The brood consists of from four to five eggs, dotted with small spots; the young progeny are covered with down when hatched, and should be fed at first upon the yolk of eggs, and afterwards with seeds, softened as they would be in the crop of the parent bird. The breeding season commences in January, and continues until August, when the feathers are moulted.

The HOODED FINCHES (*Spermestes*) resemble the members of the last-mentioned group in the general shape of their bodies. The beak is short and thick, the upper mandible being furnished with a shallow furrow, and slightly curved towards its extremity. The wings are comparatively short, the first quill somewhat less than the second, which is the longest of all; the strong tail is abruptly

graduated; the plumage is black upon the upper part of the body, white underneath, and very harsh, the whole coat being usually marked with band-like lines. The upper mandible is dusky, the lower somewhat paler. One of the best known species belonging to this group is

THE MAGPIE FINCH.

The MAGPIE FINCH (*Spermestes cucullata*) is a small bird, about three and a half inches long, the length of the wing being one and a quarter inches, and that of the tail thirteen lines. The plumage upon the upper part is a deep glossy brown, which is darkest upon the head and neck, and extends as far as the breast; the under part of the body is white; the rump, upper and lower tail-covers, and the sides of the belly are streaked with greyish white and dull black, and still further ornamented with a large dark shining patch of metallic green, situated upon the sides of the breast; the wings and tail-feathers are uniformly black, the under side of the quills being of a bright grey; the iris is brown, the upper mandible black, the lower mandible whitish, and the feet black. The Magpie Finch is an inhabitant of the countries in the vicinity of the river Gambia, but of its history when in a state of freedom we are quite ignorant.

Slight and uncertain as is our knowledge of the AUSTRALIAN FINCHES, it would be impossible for us to pass them unnoticed, for what trifling information has been acquired respecting them shows them to be as remarkably distinguished by their beauty or peculiarity of form as are most of the animal and vegetable productions of that "land of contrarieties;" many of them, indeed, vie with the American Tangaras in the gorgeousness of their plumage.

The REED FINCHES (*Donacola*) are recognisable by their short thick beak, which bulges out at its base, and has the ridge much elevated; the wings are comparatively short, their three first quills being longer than the rest; the tail is short and rounded, the two exterior feathers being of equal length; the tarsus is long, and the plumage striped and banded, with a dark tint on the upper part of the body, its under portion being similarly marked, but with a lighter shade.

THE CHESTNUT REED FINCH AND THE DOUBLE-BANDED REED FINCH.

The CHESTNUT REED FINCH (*Donacola castaneothorax*), and the DOUBLE-BANDED REED FINCH (*Donacola bivittata*), two species of this group, have been brought repeatedly to Europe within the last few years, thus rendering us somewhat familiar with their habits. These birds closely resemble each other in their general appearance, and in their length, which is about four inches. The head and upper part of the throat are dark grey; the cheeks, throat, and ear-covers blackish brown; the upper part of the body reddish brown, and the upper tail-covers orange or tawny; the tail is reddish brown, edged with a paler shade; the breast is decorated with a broad, light, chestnut-coloured circlet, which is enclosed upon its lower portion by two black lines; the breast, belly, and under tail-covers are white, striped with black. The Double-banded Reed Finch is found near Moreton Bay, where it lives upon the banks of rivers, passing its time among the reeds, very much after the manner of our Bearded Titmouse (*Calamophilus biarmicus*), which it resembles in the activity of its movements.

The DOUBLE-BANDED FINCH is distinguished by the size of the black spots upon the cheeks, which reach as far as the breast; moreover, the chestnut-coloured circlet upon the breast is broader, and separated from the light-coloured belly by a broad black line.

Little is known of either of the above species in their native state. When caged they are lively and contented, but require to be kept in pairs, as it is only then that their affectionate dispositions can be fully appreciated. Song they have none, and their monotonous and prolonged call has not even purity of sound to recommend it

Both these Finches breed and moult in the months corresponding to our autumn and winter. In confinement they may be reared upon almost any small seeds, with a little green food as an occasional variety.

The second Australian section comprehends the group of the GRASS FINCHES (*Poëphila*). The beaks of these birds resemble those of the Hawfinches, being very deep at their base, and almost as broad as they are long; the wings are of moderate size, their first quill shorter than the rest, and the four succeeding ones of equal length; the wedge-shaped tail is abruptly graduated, and its two middle feathers considerably elongated.

Another very similar race of these Australian birds has been separated from this group by Reichenbach under the denomination of CHAFF-FINCHES (*Chloëbia*), on account of the peculiar formation of the tail, which is short and wedge-shaped, the two middle feathers standing out in the old bird, and terminating in a bristle-like appendage; the difference of plumage is also striking, the coat of the Grass Finch being light brown, with very prominent lines, of a darker or lighter shade, passing around the body, while the Chaff-finch is of a bright green above, but yellow underneath, and has a broad line upon the breast.

THE ADMIRABLE CHAFF-FINCH.

The ADMIRABLE CHAFF-FINCH (*Chloëbia mirabilis*) is the species we select for description, being a bird of surpassing brilliancy as regards the coloration of its plumage. The top and sides of the head are bright red; the throat black, as are the edges of the feathers at the back of the head; the neck is surrounded by a line of sky-blue, which is narrowest in front, and white on the nape, where it shades into a yellowish green, blending with the mantle, which is of the green usually seen in Parrots. The rump and upper tail-covers are pale blue, the quills of the wings bordered with yellowish brown; the exterior tail-feathers light blue, whilst those in the middle are dark grey or black. On the lower part of the body the sky-blue ring around the throat is bordered with a broad line of lilac, which, increasing in size, passes over the breast, and is separated from the yellow belly by a narrow line of orange. The female resembles her mate, but is rather paler, and the middle tail-feathers are shorter than in the male.

This magnificent creature was first seen in the vicinity of Raffles Bay, Australia, but only three specimens were obtained, and no information acquired as to its habits. Macgillivray tells us that the CHLOËBIA GOULDII is only this species in another coat, and mentions having seen a flock of them in the neighbourhood of Port Essington, no two of which were alike in plumage, the greater number not having arrived at their full beauty; many still retained the black or partially black feathers on the top of the head, whilst in some this part was of a beautiful red, thus making it evident that these two birds, which had been considered as distinct species, must now be looked upon as one and the same. In their habits the Australian Finches are like the rest of their congeners, frequenting such parts of the country as are covered with reeds, and situated at no great distance from the banks of a river, seeking for seeds upon the ground, and climbing up and down the reeds with the dexterity of Titmice. They are sometimes seen in flocks, but are not as social as the rest of their family; they show no fear in their intercourse with man, and are constant visitors to the fields and gardens, occasionally taking more or less lengthy excursions over the surrounding country. Their nests are described as differing much in construction, some resembling those of Bottletits, being placed among reeds, whilst others are built on trees in the immediate vicinity of the cyries of birds of prey. Gould mentions having seen one of these nests placed partially within the gaping hole of a tree that had been selected as the home

of a family of WEDGE-TAILED EAGLES (*Uroaëtos sphænurus*), and tells us that the little male was perching without any sign of fear on the same branch as his formidable but certainly very friendly neighbour.

THE RICE BIRD.

The RICE BIRD (*Padda oryzivora*), one of the largest of the Asiatic Finches, constitutes, with one or two others, a group distinguished by their strong beaks, which are nearly straight, forming at their



THE RICE BIRD (*Padda oryzivora*).

origin almost a right angle with the forehead, and furnished with a slight ridge in front of the nostrils. The wings are of moderate length, the two first quills being considerably longer than the rest; the individual quills that form the short and rounded tail are of unusual breadth; the plumage is grey or brown, with white patches upon the cheeks. In China these birds have always been called by the name that still distinguishes them, from the fact that they subsist in great measure upon "Padda," or rice that is still in the husk; and Chinese artists from the earliest times have thought them objects worthy of being constantly painted upon porcelain and rice-paper. They were not known to Europeans until about a century and a half ago, but at the present day are exported from Asia in great numbers. The plumage of the Rice Bird is grey, the wings of a somewhat deeper shade, and the sides lightly tinted with rose colour; the cheeks are of a pure white; the quills grey, with a dark border, and

of a silvery whiteness on the under side ; the tail is entirely black ; the eyes brown, the eyelids red ; the beak a bright rose colour, edged and tipped with pearly white ; the feet are reddish. Many varieties of plumage are found among the members of this group, some few of them being entirely white.

The Rice Birds are found all over Southern Asia, as also Java and Sumatra, and are very numerous on the former of these islands. Like our Field Sparrow, they inhabit the agricultural districts, frequenting woods, gardens, or bushes, from the month of November until March or April—during which time the fields of rice are under water—and subsisting upon such seeds and small fruits, insects or worms, as they can glean from the shrubs or bushes ; but no sooner does the water disappear, and the rice begin to ripen, than they leave everything to attack it, and would do incalculable damage were not prompt means taken by the natives to protect themselves against their ravages. As an effectual means of scaring away these feathered thieves small watch-towers are erected upon bamboo poles, placed in the rice-fields at no great distance from each other ; connected with these little buildings are numerous strings and thin slips of bamboo, to which are attached a profusion of large dry leaves, dolls, wooden clappers, and similar objects, the whole of this grotesque network being agitated from time to time by a native perched within the tower, like a great spider in the centre of its web, who thus produces a series of gymnastic performances by the dolls, and such noises with the clappers as are sufficient to frighten the boldest trespasser. Even after harvest-time is over, abundance of food is procured by these gleaners from among the stubble in the rice-fields, in which thousands of ears lie buried, this supply being still further increased by the incredibly rapid growth of innumerable weeds, that spring up in all directions when the rice is cut, and soon furnish a rich banquet of quickly ripened seeds. At this season the Rice Birds are fat and delicate, and the young especially are much sought after, as affording a dainty dish to the inhabitants of the country, and a source of amusement to their children, who drag them about the streets fastened to the end of a long string, as a sort of living toy. The nests of these birds are built of grass, and placed sometimes on the summit of a tree, sometimes among the creeping plants that cover its trunk ; in the former case, they are usually of large size, and in shape like the half of a sphere, whilst under the latter circumstances they are much smaller, and more irregular in their construction. The brood consists of from six to eight brilliantly white eggs (see Coloured Illustration, Plate IV., Fig. 7), about nine lines in length. In its disposition the Rice Bird is quarrelsome, and its feeble notes are quite unworthy of being called a song.

THE LITTLE GOLDBREAST.

The LITTLE GOLDBREAST (*Pytelia subflava*) will furnish us with the best type of the STRIPED FINCHES, whose distinguishing characteristics are the long and pointed beak, slightly vaulted at its roof, its origin being nearly at right angles with the forehead ; the length of the second quill of the wings, and the short and rounded tail. The plumage of the upper part of the body is of an olive-green or greyish tint, somewhat lighter beneath, and delicately striped upon the sides of the body. In size the Goldbreast does not exceed from three and a half, to three and three-quarter inches, the span of the wings five and a half inches, the length of the wing two and a half, and of the tail one and one-sixth inches. The plumage is more varied in colour than in others of its family ; the entire upper portion of the body is olive green, and the hinder part brownish red ; a red line passes over the eyes, the throat is white, the upper part of the breast and under tail-covers orange, the sides of the belly greyish olive, marked with white crescent-shaped spots, and its middle lemon yellow ; the tail is black, and the feathers edged with white at their extremities ; the back and legs are red.

We are entirely ignorant as to the habits of these birds when in their native lands, and can

only inform our readers that when caged they are very attractive little creatures, manifesting great attachment to each other, and associating readily with other Finches. Their voice is gentle, and not unpleasing in its sound.

THE BLOOD FINCH.

The BLOOD FINCH (*Lagonosticta minima*) is a species fully equalling that above described in its claims to our notice, and represents a group recognisable by their comparatively long and compressed beaks, rounded tails, and red plumage, marked with small white spots. This species, which is known to dealers in birds as the "Little Senegal," is about three inches and a quarter long, and five and a half broad, the wing-covers measure two inches, and the tail one inch and a half. The coat of the male is very beautiful, both in its hues and markings. The upper part of the head, nape of the neck, back, and wings are dark brown, shading into black upon the tail; the face, front of the throat, breast, and rump are bright red; the belly light brown, and the vent light grey; the breast and hinder part of the body are marked with minute spots, the beak and feet are red, the eye brown. The coat of the female is greyish brown, of a lighter shade upon the lower part of the body, the rump is red, spotted on its sides with white. The young resemble the mother.

In its native lands the Blood Finch occupies a similar place to that of the House Sparrow with us, and at certain seasons of the year may be found in great numbers in all the villages of South Nubia and Eastern Soudan, flying in enormous flocks over the surrounding country, and occasionally occupying the steppes at a great distance from the abode of man, or living upon mountains at an altitude of 400 or 500 feet above the level of the sea. The habits of this elegant and bright little bird closely resemble those of its congeners, none of whom exceed it in lightness or agility, either when flying, or hopping among the branches with its companions, whose society it cultivates even during the period of incubation. By the time the dry season is over it has moulted, and at once proceeds to choose a mate and undertake the care of a family; the little couples may then be seen going frequently down into the villages and streets to examine the straw houses or mud huts of the natives, in order to find a suitable spot upon which to build their nest, which is merely a heap of dried grass thrown roughly together, the only care being expended in making the interior compact and round. Occasionally, when no better place is to be found, the birds have to content themselves with a tree, or are even reduced to make the cradle for their young upon the ground. We ourselves, in the month of January, when near the banks of the Upper Nile, were upon one occasion attracted by the anxious cries and restless movements of a female Blood Finch, as she hopped about, evidently trying to divert attention from her nest; after a short search we found it in the midst of a heap of grass, from which it was scarcely distinguishable; it contained a number of small, white, round eggs, with a very smooth shell. The work of incubation extends over a considerable space of time, and many broods are laid in the course of the year. When caged this bird is very docile; and its song is both lively and pleasing. The male and female are extremely attached to each other, and alike occupy themselves in making the nest and rearing their offspring, usually sitting upon the eggs for about a fortnight; the young when first hatched, are covered with a brownish down instead of feathers, and are fed by the parents with half-digested corn, insects, caterpillars, and other larvæ. As far as we have ascertained, all attempts to naturalise these birds have been unavailing, because they continue to breed and moult during the same months as in Africa, and find our cold winter quite unendurable under these circumstances.

THE VARIEGATED FINCH.

The VARIEGATED FINCH (*Emblema picta*) may be regarded as the Australian representative of the last-mentioned bird, and is particularly remarkable for its long, conical beak. Its wings are of moderate length, the first quill being much shorter than the rest, and the four next of equal length;

the tail is somewhat rounded at the sides. The colours of this species are extremely striking; the top of the head, and the whole of the lower part of the body, wings, and tail are brown; the face, throat, and wings bright red; the upper mandible black, whilst the lower one is scarlet, and marked with triangular black spots towards its base; the feet are light red. We are indebted to Gould for the discovery of this beautiful creature, but unfortunately he was only able to procure one specimen, and learnt nothing as to its life and habits—indeed, had he not succeeded in making a painting of it, we should never have been acquainted with this species, as the bird was stolen soon after being stuffed.

THE STEEL FINCH.

The STEEL FINCH (*Hypochera ultramarina*) frequents the banks of the Nile, and represents a distinct group, with one species of which (*Hypochera nitens*) Europeans are familiar. This bird, like its well-known relative, is distinguished by the following characteristics: a compact body, short tufted tail, the exterior feathers of which are somewhat rounded, and wings of moderate length, reaching half way down the tail; the beak is short, conical, and vaulted; the nostrils are furnished on each side with bristles of considerable length. The plumage varies with the age of the bird or season of the year, that of the male being black. The feathers of the *Hypochera nitens* are shaded with green, those of the *Hypochera ultramarina* with bright blue. In the female the body is light brown, the feathers being edged with reddish yellow, the breast, belly, and under tail-covers are white, the eyebrows of a red shade, as is a streak that passes over the head. The male bird assumes a similar plumage during the dry season. This species measures rather more than four inches, the wings two inches, the tail one inch and four and a half lines.

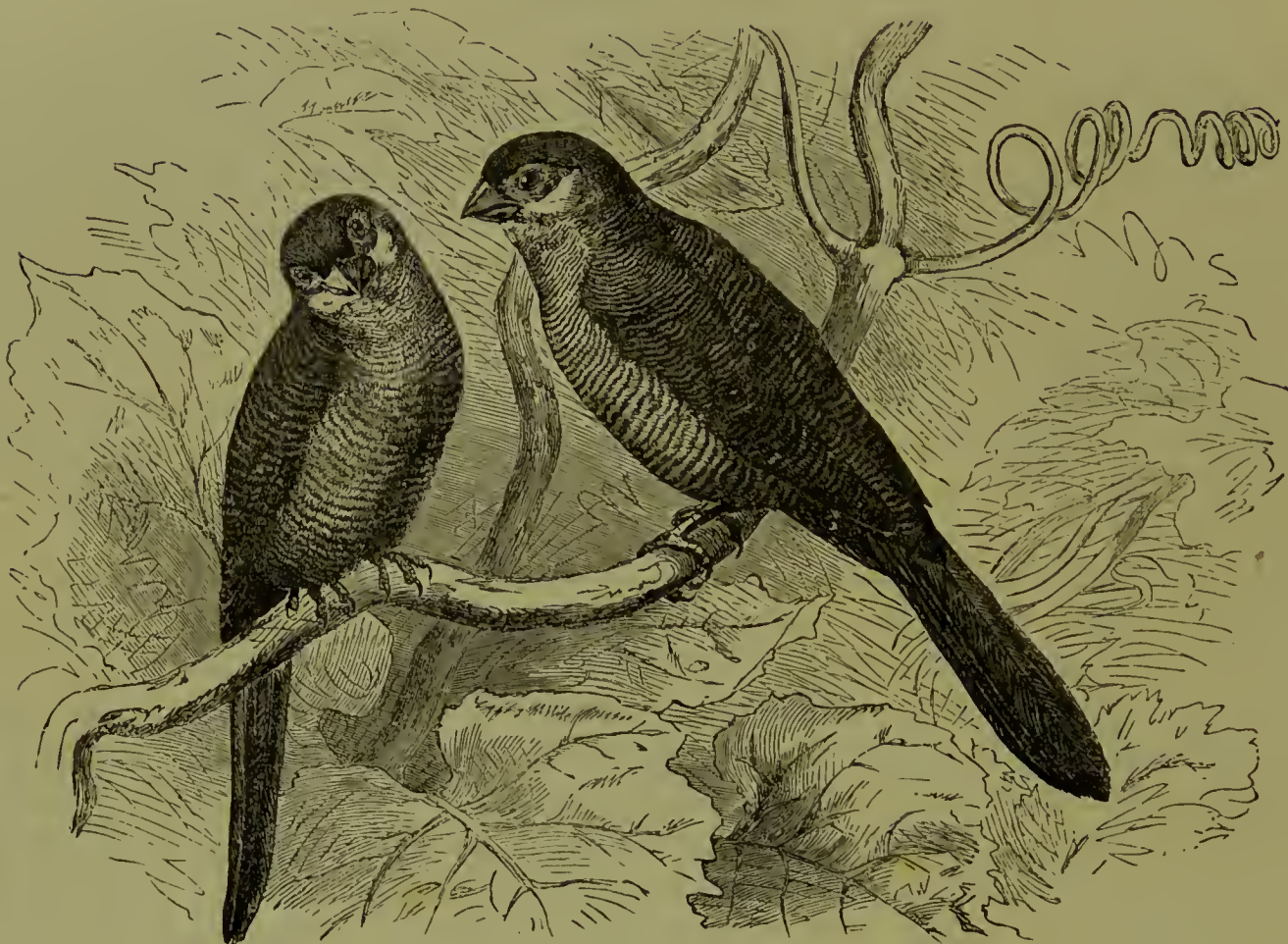
The Blue Steel Finch is found chiefly in Dongala, spread over the whole face of the country, inhabiting the steppes, or seeking its food in the native villages with equal impartiality; its favourite haunts, however, are those wells and pleasant places selected as resting-places by the many caravans of travellers passing through their domains, the débris from whose dinner or supper afford a plentiful repast, which is rapidly appropriated by these elegant and industrious little creatures, who, meantime, exhibit their graceful attitudes and attract constant attention to their varied movements. The period of incubation extends from January until March; the nest is built upon a tree, and is a mere heap of grass. We are unacquainted with the appearance of the eggs. No sooner are the young birds fledged than the whole company associate themselves with the Fire Finches, and fall in masses upon the fields of *durrah*, thereby drawing down upon themselves the hatred of the natives, who use every means in their power to drive them from the spot, employing for this purpose a contrivance similar to that we have already described in our account of the Rice Bird. The Blue Steel Finch is never caught for purposes of domestication, but large numbers of the Green species are captured annually on the western coast of Africa, and exported to Europe and America.

THE BUTTERFLY FINCH.

The BUTTERFLY FINCH (*Mariposa phænicotis*) is a species found constantly associated with the birds above-mentioned. Its body is lengthy and slender, its tail long and wedge-shaped, and its beak, which is extremely broad and high, placed at a right angle with the forehead. The first quill of the wings exceeds the rest in length. The plumage of this bird is very thick and silky; the whole of the upper part of the body is grey, the face, breast, sides, and upper part of the centre of the tail a bright greenish blue, the belly and under tail-covers dark grey, as is the under portion of the tail. The cheeks are marked with a vivid red spot, the beak is pale red, and the feet flesh colour. Both sexes are alike in plumage, except that the female is without the red spots upon the sides of the face. This

bird is four and a quarter inches in length, the breadth across the wings six and a quarter inches, the length of the wing is one inch and five-sixths, and of the tail one inch and three-quarters.

The Butterfly Finch inhabits the greater part of the continent of Africa, flying over the country in small parties, that rarely become much increased. The nest, which is seen both during the rainy and dry seasons, is placed upon a low bush, and resembles a rough bundle of hay rather than a cradle for the young. The eggs, from four to seven in number, are long and of a brilliant white. We are told that this species will occasionally steal into a Weaver Bird's nest to deposit its eggs, but cannot speak positively as to the truth of the statement. This elegant Finch, better known upon the Conti-



THE PHEASANT FINCH (*Astrilda undulata*).

ment as "*Cordon Bleu*," is lively and restless in its habits, and the attachment testified by one little mate for the other renders them extremely attractive when caged. The only care necessary for their successful rearing is to keep them constantly in a warm atmosphere.

Next in order to the preceding we place the ASTRILDS (*Astrildæ*), as closely resembling them in many particulars, the body being slender and the tail wedge-shaped; but the beak, although almost as high and broad as it is long, rises with a decided curve towards the brow. The plumage is very silky, delicately coloured, and marked with a series of undulating lines. Europeans are familiar with two species of this group—the GREY ASTRILD (*Astrilda cinerea*), and the PHEASANT FINCH (*Astrilda undulata*). The coat of the former is brownish grey, lighter upon the lower part of the body, or almost imperceptibly shaded with dark wave-like markings; the tail is white, and its exterior feathers white upon their outer web; the bridles which in this bird pass around the eyes are of a blood-red, as is the beak; the feet are grey. The plumage of the Pheasant Finch is of a brownish grey, fading upon the throat into greyish white; the lower part of the breast and sides of the belly are tinged with rose

colour, and the outer web of the exterior tail-feathers are light grey, striped with a deeper shade. In other respects this bird resembles the Grey species; both are alike in their size, which does not exceed four inches.

The whole of Southern and Central Africa is graced by the presence of these beautiful creatures, the "Little Pheasants" generally occupying such parts as are thickly wooded, and flying about the country in small flocks, perching when in need of rest upon the bushes, from which they descend to seek for seeds upon the ground. These birds are extremely common in Natal, where we are told they devour great numbers of winged termite ants, pursuing them in the same manner as that practised by the Flycatchers. The nest of the Astrilds has been described as melon-shaped, and closed at the top;



DETACHED NEST OF MALE GOLD-FRONTED WEAVER BIRD
(*Oriolinus icterocephalus*).



NEST OF ASTRILDA,
FROM SENEGAL.

it is placed in beds of high grass, and built of fine leaves or stalks stoutly woven together, and hanging loose about the exterior. The eggs, four or five in number, are carefully tended by both parents, who sit alternately. As far as we can ascertain, the Pheasant Finches do not migrate, but may be found living for years in the same districts. In disposition they are very attractive, and this, combined with their beauty and rather pleasing voice, will account for the large numbers that are captured and exported to Europe.

We are now about to enter upon a description of one of the most remarkable groups of African birds, the strange forms of whose very varied nests are no doubt familiar to many of our readers. It would be difficult to imagine a more beautiful sight than that presented by a settlement of these most artistic WEAVERS, their nests hanging not singly, but by dozens, from the branches of a tree, which is generally selected with a view to being in the immediate vicinity of water. So strong and firm is the work of the little architects that the rain and blasts of years will not shake their abodes from their foundations, and it is by no means uncommon to see a tree thickly covered with the consecutive labours of many generations, and literally bending under the weight of these curious and elegant constructions. The central and western parts of Africa are particularly resorted to by these birds, also long accounts are given us of their abundance in Java and Madagascar.

WEAVER BIRDS.

THE WEAVER BIRDS (*Plocei*) are large Finches, with bodies somewhat elongated, having slender, or in some cases, short broad beaks, long wings, tails of moderate length, and very bright coats, the latter often varied during the breeding season by a peculiar kind of plumage. Yellow and yellowish

red are usually the principal tints in the coloration of the feathers; but species are found in which black, red, white, or grey predominate. The head and face are generally dark, the back greenish or yellowish red, the lower part of the body dark yellow, or of a light or dark red. Like other Finches, the Weaver Birds are extremely social, living, as we have said, in large settlements during the period of incubation, and flying over the country in company with thousands of their feathered brethren during the remainder of the year. Immense damage is done by these swarms to the fields over which they pass, and about which they remain until the time comes for returning to their old breeding-places. Shortly after the moulting season the work of building commences, and several months are generally occupied in diligent labour before the newly-constructed homes will suit the requirements of the fastidious owners, who frequently tear a whole nest to pieces, and entirely recommence their labours, rather than rest content with a performance that is not quite satisfactory. The nests of the various species of Weaver Birds differ considerably in their shape and general structure, some building a detached residence (see p. 165), in which the male luxuriates, whilst his spouse is busied with the cares of her family; others, again, are so large as to contain numerous compartments, the whole colony working so close together as to form, not many separate nests, but one large establishment (see p. 168). Fibres, slender twigs, or blades of grass, are the materials usually employed in the construction of these edifices, the whole being woven tightly together, after having been rendered more flexible and adhesive by an application of saliva from the little artist's beak. The greater number of such settlements are formed of nests containing merely the chamber for the young and the apartment arranged by the male for his own occupation. Some males, however, build separate nests for themselves. Both are represented in our engravings.



NEST OF WEAVER BIRD
SLIT OPEN.

Many tribes of Africans tell wonderful tales about these creatures and their homes, some of which border upon the marvellous. The Malays have a saying that "He who can remove a Weaver Bird's nest without breaking it, will find a golden ball within;" and there is a popular belief in Africa that the lumps of clay so often found in these little dwellings are employed by the tenant as a kind of candlestick in which it fastens the fire-beetle it is supposed to employ to light its tiny apartment by night. The Weaver Bird lays many times during the year, and feeds its somewhat numerous family upon insects; these latter, combined with various kinds of seeds, also constitute the food of the parents. In spite of the injury done to the fields, but few precautions are taken by the natives to protect themselves against the depredations of these ingenious architects, who might live out the full term of their natural life were it not for the attacks made upon them by their numerous enemies, who are ever on the watch around their habitations. Our engraving (p. 175) represents the manner in which the

monkey, one of the most formidable of their foes, obtains its prey. It is in hope of baffling the attempts of such unwelcome visitants that the Mahali Weaver Birds insert thorns with the points outwards into the walls of their nests, thus enabling the occupants to rest quietly, without fear of seeing their young carried off by snakes and other intruders. Large numbers of these curious and interesting birds are annually exported and sold at low prices, so that our readers need have no difficulty in witnessing their constructive powers, which are often displayed to great advantage in a cage. One of the most celebrated of this group is

THE SOCIAL WEAVER BIRD.

The SOCIAL WEAVER BIRD (*Philetaërus socius*) stands alone in the peculiarities that distinguish it from its congeners. This species is recognisable by its conical and elongated beak, which is somewhat compressed at the sides; its upper mandible rises into a slight arch, and is furnished at its edges with a tooth-like appendage; the wings are of moderate length, scarcely extending beyond the root of the tail: their first quill is much shorter than the succeeding four, which are of equal length; the tail is rounded at its extremity. In this species, as in the whole family of Weaver Birds, the tarsus is strong and high. The plumage is extremely simple: the top of the head, sides, and front of the neck and breast are of uniform deep grey; the upper part of the head marked with dark spots; the nape and back grey, with undulating lines of black; the wing-covers, quills, and tail-feathers deep brown, edged with light grey; the feathers on the sides of the belly are blackish, bordered with a paler shade; the region of the beak and a small spot over each eye are black; and the beak and legs horn colour. Its length is about six inches and nine lines, and the wing measures rather more than two inches and ten lines. The female is known by the paler colour of the back, and the young by the brown tints upon the head; the latter are without the black spot upon the lower mandible and sides of the body.

It is generally considered that the Social Weaver Bird never crosses the Orange river, though how far it may penetrate in a northerly direction has not as yet been ascertained. Patterson, who wrote at the end of the last century, mentions having seen mimosa forests densely inhabited by these birds, who congregate in the hope of preserving their eggs from the numerous snakes. For this purpose, hundreds of them build their nests beneath one large roof, resembling a thatched house in its appearance. This roof (see p. 168) is fixed to a large branch or portion of the tree, and under it the actual nests are placed so closely together that it would be quite impossible for a snake or any other enemy to penetrate to the interior. All day long the busy crowd of workers hurry to and fro, resembling a swarm of bees in their industry, and, like them, return laden with everything needful for the construction or improvement of their homes, while year by year the settlement increases in size, until at last the tree literally bends beneath the weight of the superincumbent colony. The entrances to the interior are very numerous, and situated underneath the massive edifice, each opening leading to a kind of corridor or street, on both sides of which are the small and very secure apartments provided for the young. These birds subsist upon the seeds of the grasses employed in the construction of their dwellings. The above account has been verified by Mr. A. Smith, a well-known traveller and naturalist, from whom we learn that each couple works at its own portion of the building, all co-operating, however, in the common endeavour to concentrate the nests under one substantial straw thatch, and thus ensure the safety of the whole flock. These aerial cities are generally built upon large branches at a considerable elevation, but the Tree Aloe is occasionally selected as affording suitable support. The brood of the Social Weaver Bird consists of three or four blueish-white eggs, marked with small brown spots at their broadest end. The young are fed entirely upon insects, which are only occasionally eaten by the parents.

THE GOLDEN WEAVER BIRD.

The GOLDEN WEAVER BIRD (*Ploceus galbula*), the type of a numerous group, is an inhabitant of Eastern Soudan. This bird and its congeners are all slenderly formed, and of moderate dimensions, possessing a slightly curved and shallow beak, the base of which appears to join the forehead at an acute angle; the feet are strong, the wings moderately long, reaching past the tail-covers; the tail is of medium length, and abruptly rounded; the third, fourth, and fifth quill-feathers are the longest, the first being rudimentary. The adult male is a most beautiful creature, the top and sides of its head, and all the lower portion of its body, being of a bright lemon colour. The region of the eyes, and the parts around the lower mandible are bright red; the back and wing-covers a brilliant green,



NEST OF MAHALI WEAVER BIRD.

NEST OF SOCIAL WEAVER BIRD
(*Philetaërus socius*).

with darker shafts to the feathers; the quills and tail are reddish brown, bordered with yellowish green; the iris is reddish brown, the beak black, and the feet yellow. In the female the forehead is of a greenish yellow; the back of the head, nape of neck, and mantle bright green; the shafts of the feathers are of a deeper shade; the throat is a dirty white, the upper mandible deep brown, the lower one somewhat paler. The young male resembles the mother, but is distinguished by the dusky yellow upon its throat.

The Golden Weaver Bird is common in Abyssinia and the surrounding countries, where it may be often seen flying about in company with its congener the Green Weaver Bird, but never joining with it in the construction of a settlement. In their habits these birds are closely allied to other Finches, and are lively, active, and extremely social. At such times as the work of building the nests or rearing their young is not going on, they generally congregate in large flocks, and perch



Painted by Cassell's Birds

YELLOW-BILLED ORIOLE

Oriolus acrorhynchus

(Three-fourths life size)

on the very summits of the trees, pouring forth their song for the delight of the female part of the community, until they are inclined to go in search of food. About noon all is hushed, for at this time the cunning Weavers are going down to drink, an operation requiring the greatest circumspection and care, as their enemies the Falcons are peeping at them over the trees, and ready to pounce upon them at a moment's notice. They now assemble in the bushes near the water side, frequently to the number of some thousands, where they scream and chatter much after the manner of our Sparrows. Suddenly, with one swoop, the little creatures reach the desired stream, take a hasty draught, and are back again to the thickets before their much dreaded foes have time to recover from their surprise



THE GOLDEN WEAVER BIRD (*Ploceus galbula*) AND THE MASKED WEAVER BIRD (*Ploceus larvatus*).

and follow in pursuit. This proceeding is repeated some ten or a dozen times during the hour that is devoted to quenching their thirst, before they again commence their search for food. When the labours of the afternoon are over, all again return to the favourite tree, to sing their songs, and sleep away the night. In Soudan the moulting season commences about July or August, and after that is over the flock are employed in making long excursions until the period of incubation returns. Most species breed twice in the year. The following description of the Golden Weaver Bird's nest was written some years ago upon the spot, where we were fortunate enough to have opportunities of observing the manner of its construction:—The operation is commenced by placing long blades of grass at equal distances from each other, and fastening them together with so much exactness that a kind of framework is prepared, in which the form of the edifice is plainly discernible. The next step is to make the walls, by weaving in long straws; great care being taken to lay them in a downward

direction, and thus render the roof water-tight. At this stage the beautiful fabric presents the appearance of a cone, placed upon the half of a ball. An entrance to its interior is next obtained by constructing a long tubular passage, extending downwards from a hole at the side, quite to the bottom of the nest, to the exterior of which it is firmly attached. The interior is lined with soft stems of grasses, and very frequently the birds may be seen employed upon this wonderful structure, even after the eggs have been laid; these latter, from three to five in number, are at first white, then red, and only gradually acquire their green colour. From Heuglin we learn that the male undertakes the principal labour of constructing his own abode, and that he may frequently be found building it, as though in anticipation, at times when he has no especial need of a nest. As far as we could ascertain, the care of brooding devolves entirely upon the female; she is, however, assiduously tended by her mate, who likewise shares her toils when the time comes for feeding the nestlings. This latter duty is performed so diligently that scarcely a minute elapses between the arrivals of the parents bringing supplies to satisfy the gaping young; they hang upon the lower part of the nest, thrusting in their heads and placing the morsel into the outstretched beaks of their hungry progeny. At such times, when the nests are numerous and placed closely together, a settlement of Weaver Birds can be compared to nothing but a bee-hive, as the inhabitants perpetually fly backwards and forwards in one unceasing bustle and confusion. These birds are occasionally, but very rarely, brought to Europe.

The BAYAS (*Nelicurvius*). The members of this remarkable group inhabit the whole of Southern Asia, including the neighbouring islands, and are characterised by the formation of the beak, which is somewhat prolonged, with the ridge vaulted, and joining on to the forehead almost in a straight line. The wings, of which the fourth quill is the longest, are of moderate length, the tail is short, the feathers being of equal size and sharply pointed, the tarsus strong, and of medium height; the coloration of the plumage is by no means bright.

THE BAYA.

The BAYA (*Nelicurvius Baya*), the most celebrated of the race, is of a dark brown upon the upper portion of its body, and all the feathers, particularly those of the wing and tail covers, are bordered with yellowish white; the breast is marked with light brown, the shafts of the feathers being of a deeper shade. The face and front of the throat are black, the top of the head bright yellow, and the primary quills edged with a narrow yellow line. The female is without the black and yellow upon the head, the eyebrows are pale, the breast and chin of a whitish shade. The winter coat of the adult male is like that of the female; in the young male the breast is pale red. The beak is horn colour, the iris brown, the feet flesh coloured, the eye dark blue. The length of this bird is six inches, and its breadth nine and a half inches; the wing measures two inches and four-fifths, and the tail two inches. This species is found extensively throughout India, Assam, Burmah, and the Malayan peninsula, frequenting woodlands in large numbers; it is much more rarely met with in the highlands of the Deccan. Corn, rice, and various kinds of grass-seeds constitute its principal food, but we have never been able to ascertain from our own observation that it will eat fruit. The Bayas breed during the rainy season, which occurs between April and September, according to the locality, and associate freely with other species. Their very curious nests, which in shape resemble a retort, are models of neat and compact architecture: these structures are generally hung from the branches of palms, or other trees, and in India we have never seen them elsewhere; in Burmah, on the contrary, it is not uncommon to find them suspended from the eaves of houses, or from the huts of the natives, some twenty or thirty in a row. On one occasion we observed not fewer than a

hundred of these strange appendages hanging to the roof of one house, and the little occupants living on excellent terms with their human neighbours; it is, therefore, very remarkable that this same species in some places should occupy the most quiet and isolated situations, only visiting such districts as are but little frequented by man. The walls of the Baya's nest are composed of blades of grass, gathered while still green, or of strips of leaves, frequently those of the palm-tree, woven carefully together, the shape of the little edifice varying according to circumstances or the taste of its owner. As soon as the chamber allotted to the eggs is fully completed, the bird proceeds to build a partition wall, thus forming a second apartment, supposed by some naturalists to be the especial property of the male, whilst others imagine that it is only intended to separate the entrance passage from the cradle of the nestlings. The entrance is tubular, and is very strongly and firmly constructed, being destined to serve as the favourite sitting-room of the whole family, when the young birds have acquired sufficient strength. No sooner is the second chamber of which we have spoken completed than the female, who has hitherto worked with her mate, retires into the part designed for her eggs, and occupies herself in weaving together the fine grass with which the interior is lined, the materials for the work being brought to her by the male bird, who alone continues the building of the passage and exterior portions of the nest. When this part of the work is concluded, the little artisan proceeds to carry in the lumps of clay, about the use of which so many opinions have been expressed. The natives assert that to these pieces of clay the male affixes fire-flies, to illumine the interior of the nest. Layard imagines them to be employed by the little builder as a whetstone whereon to whet its beak, whilst we ourselves are of opinion that they serve merely as a means of weighting the structure as it hangs suspended in the air, and have many times remarked that an unfinished nest contained more clay-balls than one that was completed. Very various accounts are given as to the number of eggs that form a brood; we have never found more than three, and feel sure that in cases where six or seven have been discovered two females must have occupied the nest. Young Bayas are frequently tamed, and form a most interesting and attractive addition to an aviary.

The CRIMSON-BEAKED WEAVER BIRDS constitute a separate group, distinguished by the unusual height and depth of their beak, which is nearly equal to two-thirds of its entire length; in shape it is slightly arched, and compressed towards its edges. The wings reach to the middle of the tail, which is short, but slightly graduated and rounded at its extremity; the plumage is brownish, spotted on the lower portion of the body when the bird is young, becoming at a later period of a yellowish or reddish shade.

THE CRIMSON-BEAKED WEAVER BIRD.

The CRIMSON-BEAKED WEAVER BIRD, or DIOCK (*Quelea sanguinirostris*), is about four inches and ten lines long, and seven inches and ten lines broad; the wing two inches, the tail rather more than one inch. The iris is brown, the beak brownish red, and the feet pale red. The plumage of this species varies considerably, according to the time of year. During the breeding season, the coat of the male is chiefly of a yellowish red; the face, forehead, cheeks, and throat black, the mantle appearing of a greenish brown, mingled with a black shade that shines through from the shafts of the feathers; these latter are edged with a red tinge; the wing and tail feathers are black; the exterior web of the quills bordered with lemon colour. The female and young birds are without the black upon the face. Very shortly after the breeding season the male dons his winter coat, in which the throat and belly are of a dirty white, and the breast and sides of a dull yellow, all the feathers having faint lines upon their shafts. The whole of the upper part of the body is a dark greenish grey, the feathers of the mantle and nape of the neck being bordered with yellow; the tail is brownish grey; the third, fourth,



THE JAVA WEAVER BIRD (BAYA), AND NESTS.

and fifth quills, and the five exterior tail-feathers are gold colour, the rest of a paler shade. The male is without the black face during the winter months.

The Queleas must be regarded as by far the most numerous of the race of Weaver Birds. In Soudan they are met with in enormous flocks, and are certainly the commonest of the feathered inhabitants of Central and Western Africa. We ourselves have seen twenty-seven brought down at a single shot. The habits of the Diocks resemble those of other Weavers, but, unlike most of them,



BREEDING-NEST OF THE GOLDEN-FRONTED WEAVER BIRD (*Oriolinus icterocephalus*).

they fly over the country, or perch upon the river banks in flocks that number several thousands, many of which are of other species. When in confinement these birds will carry on their building operations with great industry, employing coloured thread, if given to them, as a substitute for other materials. We have, moreover, been told that feathers, yarns, and worsteds of brilliant hues are much preferred for this purpose, and that the designs constructed from them are sometimes extremely beautiful, but we cannot vouch for this from our own experience. Reichenbach speaks of their manners in a way that is by no means flattering. He tells us that the Crimson Beak is a most quarrelsome, restless creature, and quite unfit to be placed in a cage with other birds of smaller size,

whom it never ceases to torment in every conceivable manner ; one very favourite method being to seize its companion by the tail, and hold it thus suspended in the air for several seconds, the tormentor meanwhile uttering cries expressive of its own enjoyment of this, for a bird, very original pastime. It will sometimes only relinquish its hold when the victim has successfully counterfeited death from this cruel treatment. If not quite in the humour for such *active* amusement, the Crimson Beak contents itself with pulling out the feathers of its playmates, who never seem to dream of opposing force to force, and quietly submit to all its persecutions. When confined with others of its own species, it is but little more conciliatory in its manners, squabbles and fighting appearing to form the principal diversion of the males, and even the females are not always exempted from the disagreeable results occasioned by the decidedly eccentric tempers of their mates. Their nests are suspended from the topmost branches of trees, and are constructed of various dry materials woven together while rendered flexible by the moisture sprinkled over them by the birds, who use their claws when fastening down the various parts, the beak at the same time doing its full share in carefully smoothing and arranging the fibres into a proper state of neatness and order. The little couple work together, apparently quarrelling the whole time ; the male usually appropriates to himself the business of constructing the exterior, while the female is busy within, and the flexible stems employed being passed from one to the other. The nest when completed is round in shape, the front, where the entrance is situated, being somewhat straighter than the rest ; the whole fabric resembles a nicely padded willow basket. The birds work for not more than three or four hours at a time, but so industriously that only about eight days are occupied in building their wonderfully beautiful home.

The TAHA may be selected as an example of a group of Weaver Birds distinguished by their black plumage. These birds have a few Abyssinian congeners also called Taha ; in all of them the body is compact, the wings and tail small, and the beak short, strong, and conical ; the upper mandible being slightly arched. The wings reach to the middle of the very short tail ; the first quill is almost rudimentary, the third longest of all ; the tail-feathers are of nearly equal length.

THE TAHA.

The TAHA (*Taha dubia*) is of a beautiful bright yellow upon its head, back, shoulders, upper and lower tail-covers, and hinder part of the body. The wings and tail are a blackish brown, and all the feathers bordered with the same tint ; the rest of the plumage is black ; the female and young male during the winter months are blackish brown above and light grey beneath, some of the feathers having deep grey shafts, while others are edged with reddish brown. The length of this elegant little bird is about four inches, of which only one belongs to the very short tail. This species is a native of Southern Africa, and is seldom found farther north than the centre of that continent. During the breeding season it seeks refuge in the fields of corn or reeds, to the stems of which it hangs its purse-shaped nest. In its habits it resembles the Fire Finches, which we are about to describe.

The FIRE FINCHES (*Euplectes*) constitute one of the most brilliant of all the many beautiful groups of Weaver Birds. Few sights that meet the eye of the traveller in the regions watered by the Nile are at once so striking and so splendid as that presented by a flock of these glowing creatures, as they dart in masses over the green fields of *durrah*, looking, when the sun sheds his rays upon them, like a multitude of aerial flames, appearing and disappearing almost with the rapidity of lightning, as they rise into the air or take refuge among the corn. The little creatures seem quite conscious of the admiration excited by their beauty, for they open and close their wings, turn themselves in every direction, and pour forth their pleasant song, as if fully appreciating the attention of a stranger.

THE FLAME-COLOURED FIRE FINCH.

The FLAME-COLOURED FIRE FINCH (*Euplectes ignicolor*) in the construction of its body closely resembles the Taha, from which, however, it differs entirely in the colour of its plumage. The coat of the male is extremely soft, and its whole surface, except the wing and tail feathers, of a bright black or fiery red. Except during the breeding season the male and female are alike dressed in a modest garb of brown, which is so completely changed when pairing time arrives as to differ not merely in colour, but in the softness and texture of the feathers; the wings and tail alone remaining unaltered. When



NESTS OF SOUTH AFRICAN WEAVER BIRDS.

clothed in all its glory the male bird is black upon the top of the head, the cheeks, breast, and belly; the other parts of the body being bright red; the wings exhibit a brownish shade, owing to the somewhat paler edges of the feathers. During this season the tail-covers become of such unusual length as almost to conceal the tail. The eye is brown, the beak black, and the feet brownish yellow. The body of the female is brown above, and of a yellowish shade beneath; a yellow line passes over the eyes, and the feet and beak are horn coloured.

The Fire Finch inhabits the whole country from the middle of Nubia to the interior of Central Africa, preferring such places as are in the vicinity of man, frequenting fields of corn, and only taking up its quarters in beds of grass or reeds when other accommodation is not attainable. A field of *durrah* is a veritable Eden to these birds, who cause much injury to the natives, often completely destroying the crops, in spite of the many devices employed to scare them away; for these bold-hearted little thieves are not to be deterred from their work of destruction either by the dancing of dolls or rattling of clappers. The Fire Finch exhibits great activity; when amongst the corn it resembles a Reed Sparrow rather than a Finch in its movements, as it climbs up and down the stalks, or hides

itself among the grass. When the period of incubation is over, and the harvests are gathered in, the fields that have afforded them food are deserted, and some time is then passed in flying about the country, after the manner of their congeners. This species of Weaver Bird can scarcely be said to form settlements, each couple building somewhat apart from the rest. The nest is constructed of stalks and blades of grass woven so loosely together that the little brood are often visible through the lattice-work of their cradle, which is either placed upon the ground in a bed of grass, or fastened to the higher stalks. Considerable difference is observable in the size and shape of these nests, some



THE FIRE FINCH (*Euplectes Petiti*).

being long, some round; few, however, exceed seven or eight inches in length, and five or six in breadth. Our illustration represents the *Euplectes Petiti*, a very similar species to that just described, except that the whole of the lower part of the bird is black.

The BUFFALO WEAVER BIRDS (*Textor*) constitute a group well deserving our notice, and are distinguished by their large size, thick, conical beak, which is unusually thick at its base, long, abruptly-rounded wings, and slightly rounded tail.

THE RED-BEAKED BUFFALO WEAVER BIRD.

The RED-BEAKED BUFFALO WEAVER BIRD (*Textor erythrorhynchus*) is the species of this group with which we are most familiar. This bird is from eight and three-quarter to nine and three-quarter inches in length. Its plumage is black, the front feathers of the upper wing-covers and quills being bordered with white; the beak is pale red, the foot light brown, and the eye dark brown.

THE ALECTO BUFFALO WEAVER BIRD.

The ALECTO BUFFALO WEAVER BIRD (*Textor Alecto*) resembles the last-mentioned species in the colour of its plumage, but is easily distinguishable from it by the difference in the shape of the beak. Its feathers are soft and brilliant, some of those under the wings and upon the sides being occasionally nearly white. The eyes are brown, the beak yellow, tipped with blue upon its extremity and edges, the feet are of a dirty grey. Its length is almost the same as that of the species last described.

DINEMELLI'S BUFFALO WEAVER BIRD (*Textor Dinemellii*).

THE DINEMELLI BUFFALO WEAVER BIRD.

The DINEMELLI BUFFALO WEAVER BIRD (*Textor Dinemellii*), as the third member of this group has been called, is a native of Abyssinia. This species is white upon the head and lower portion of the body; the mantle, wing and tail covers are chocolate colour, each feather being edged with a lighter shade; the shoulders, rump, and tail-covers are marked with small scarlet spots; the bridles are black, the beak a dirty deep blue, the feet dark blue. The body measures about seven inches, the wing four inches, and the tail two inches.

All the foregoing varieties of Weaver Birds resemble each other in their mode of life, and must certainly be reckoned as the most remarkable members of their family, for though Finches, they have many features in common with the Thrush, and their nests resemble those built by Magpies rather

than such as are made by other Weaver Birds. The three species we have mentioned alike frequent pasture land, keeping as much as possible in the immediate vicinity of the herds of buffaloes, upon whose backs they perch, to obtain the ticks that form their principal nourishment; they may constantly be seen around these huge creatures, to whom they not only render this service, but warn them of the approach of danger. Strangely enough, these birds confine their attentions entirely to the buffalo, whilst their constant companion, a species of *Buphaga*, renders the same service exclusively to the rhinoceros. The Black Weavers are by far the least numerous members of this trio, their settlements rarely including more than about eighteen nests, which are built upon some large tree, and are remarkable for their size, if we consider the dimensions of the bird by which they are constructed. The nests, which have a very beautiful exterior, are formed of slender branches and twigs; those of the Garat Mimosa being frequently employed, in spite of the thorns with which they are armed; these materials are woven carelessly together, and the whole fabric, some three or four feet in diameter, is so lightly constructed that the eggs are often visible through the sides of the nest. The interior is lined with delicate fibres and grass, the entrance being an opening large enough to admit a man's hand at one end, while at the other is a hole so small as to allow nothing larger than the birds themselves to pass through. We learn from travellers in Africa that the nests of this species are occasionally found of a much larger size than those described, some measuring from five to six feet in length, and four to five in breadth and height; these enormous structures, however, are not occupied as a residence by one family, but are joint property, some containing as many as from three to eight distinct nests, in each of which may be seen the three or four white eggs, spotted with brown, that constitute the brood. As may well be imagined, the noise and bustle around one of these compound nests must be heard to be appreciated; indeed, the vicinity of a settlement is unmistakably proclaimed by its busy and loud-voiced proprietors. The Black Buffalo Weaver Bird breeds at very various seasons of the year, the time depending on the part of the continent that it inhabits. Its flight is hovering, very light, and produced by a slow motion of the wings, which at each stroke are raised high towards the back. When upon the ground it runs with ease, and is most adroit in its movements among the branches of the trees to which it resorts.

THE WHYDAH OR WIDOW BIRDS.

THE WHYDAH or WIDOW BIRDS (*Viduæ*) form the group to which we shall next allude, as being most nearly allied to the family of the Weavers. Whether the members of this family have had the name of *Widow* bird assigned to them by reason of the blackness of their plumage, is a question we shall not attempt to decide; some naturalists affirm that the word *Widow* is merely a corruption of *Whydah*, the name of the place from which they were first obtained by the Portuguese. These birds are Finches of moderately large size, remarkable from the fact that the plumage they acquire during the breeding season is distinguished by the peculiar form and great length of a portion of the tail-feathers, this decoration being laid aside as soon as the period of incubation is over, and replaced by another of less striking appearance. The other distinguishing characteristics of this family are the short, conical, and pointed beak, somewhat dilated at its base and compressed at its tip, and the wings of moderate length. The plumage of the male is black above, intermixed here and there with white and red; the lower part of the body is red, gold colour, or white. All the various species of *Viduæ* are to be met with throughout the entire continent of Africa, though some countries in particular might be mentioned as the actual homes of certain members of the group. In their habits the Widow Birds bear a closer resemblance to the Buntings than is usually observable in the Finch tribe; they live during

the breeding season in pairs apart from the rest, or else not unfrequently in a state of polygamy, and only congregate in large flocks and fly about the country after the period of incubation and the moulting season are over. As may be easily imagined, the movements of these beautiful birds are greatly influenced by their change of plumage; the long tail necessitating a slow and stately motion, especially when upon the wing, and often causing its possessor to be driven hither and thither at the pleasure of the wind; when perched, the sweeping tail hangs straight down, but is borne aloft when on the ground; no sooner, however, has the moulting season gone by than the Widow Bird appears to be quite another being, hopping and flying over the country with the same activity that characterises the Finches. Most species of this group seek their food principally upon the ground, generally subsisting upon grass-seeds and various kinds of insects: they pass a considerable portion of the breeding season among the branches, as affording the most convenient situation for the bestowal of their streaming tails, whilst some are found almost exclusively inhabiting the reedy parts of the country, where they also carry on the work of incubation. The breeding season is in the spring time of the African continent. In Soudan the eggs are laid about the month of August, and in Abyssinia some months earlier. The nest closely resembles those of the Weavers. The Widow Bird is rarely brought alive to Europe, and though of a pleasing disposition, and well qualified to live in a cage, is almost entirely destitute of song. The first members of this group to which we shall call attention have been named

The MOURNING WIDOWS (*Coliuspasser*). In these birds the beak is long, compressed at its sides, slightly bent towards the tip, and appears to rise at a right angle from the forehead; the wings are of moderate length, the first quill much shorter than the four succeeding ones; the feathers of the tail are considerably broader at their extremities than at the base, the middle ones being the longest. The plumage is black, with red or yellow upon the head, breast, nape, and shoulders.

THE YELLOW-SHOULDERED MOURNING WIDOW.

The YELLOW-SHOULDERED MOURNING WIDOW (*Coliuspasser flaviscapulatus*), an inhabitant of Abyssinia, is a bird about eight inches in length, of which the tail measures four and a half inches; the wing does not exceed three and one-third inches. The coat of the male is deep black, the shoulders yellow, and the wings and tail edged with yellowish white. The plumage of the female is principally of a brownish yellow, lightest on the throat and darkest upon the head, which, owing to the deep colour of the feathered shafts, has a slight appearance of being striped. The wings and tail are dark brown, and the shoulders greenish yellow. The breeding season commences about August; the nests are somewhat deep, built of large dry straws, and entered through a long tubular passage or small opening, protected by a kind of roof. The male is provided with a second nest, placed near to that containing his family, and furnished with two entrances. The eggs have a reddish-white shell, marked with rose-coloured spots and streaks, lying most thickly together at the broad end, and so minute as almost to escape notice.

THE LONG-TAILED WIDOW BIRD.

The LONG-TAILED WIDOW BIRD (*Chera caffra*), the largest of all the South African species, is remarkable for the peculiar construction of its tail, formed of sixteen imbricated feathers of great but unequal length. The plumage is of a velvety black, scarlet upon the shoulders, the latter colour being divided from the wing by a pure white line; the wings are black, the feathers being bordered with light yellow; the beak and feet are of a pale brownish yellow. In the coat of the female all the feathers are bordered with a yellow margin, only the middle being black; the lower portion of the body is greyish yellow; the throat, eyebrows, and under tail-covers are white. The length of this

large bird is not less than twenty and a half inches, the longest tail-feathers measuring fifteen and a half inches, and the wing five and a half inches.

The Long-tailed Widow Bird is social in its habits, and must certainly be reckoned amongst the

species that are polygamists, as it is by no means uncommon to see flocks containing about eighty females to not more than ten or fifteen males. As with our Barn-door Fowls, some of the old females acquire the plumage of the male. Marshes and bogs afford the breeding-places preferred by this species. The nest, which is round, is generally suspended from a reed, and formed of some green plant, the entrance to the interior being effected by means of a long passage, opening on the side that is nearest to the water. Travellers assure us that the male may be caught with the hand during windy weather, as its long tail renders escape by flight impossible.



THE PARADISE WIDOW BIRD (*Vidua paradisica*).

body is about five and three-quarter inches, the tail eleven and a quarter inches, its breadth nine and a half inches, and the wing two inches. The female is somewhat smaller than her mate.

The Paradise Widow Birds are found principally in the thinly-wooded forests of Africa, and

The COCK-TAILED WIDOW BIRDS (*Steganura*) are found throughout the whole of Central Africa, and have been described as two distinct species, resembling each other in the shape of their beak, the height of which equals its length; the ridge is arched, and joined at a sharp angle with the forehead. When in nuptial plumage the tail of the male seems to consist of only the middle feathers, which are much longer than those at the sides, and very various in their appearance; the centre feathers are bent like those in the tail of a Cock, and of great length and breadth, narrowing somewhat towards the tips.

THE PARADISE WIDOW BIRD.

The PARADISE WIDOW BIRD (*Vidua paradisica*) is black upon the head, back, and tail, brilliant red upon the nape and lower parts of the body. The plumage of the female is brownish yellow upon the head, the bridles and two lines upon the top of the head being black, the breast rose colour, as are the borders of the black wings. The length of the

appear to avoid the vicinity of man, flying about woodland districts in pairs or in small parties. Their gala dress is donned during the rainy season, and is retained for about four months. The process of moulting occupies but a very short time, and the long tail-feathers grow with great rapidity. They are often brought to Europe in considerable numbers, and are sometimes known under the name of "Birds of Paradise." The song of this species is extremely simple, but not unpleasing; it is never heard except during the period of incubation, and ceases when the beauty of the plumage has disappeared.

THE AMERICAN FINCHES.

THE AMERICAN FINCHES include a great number of species called, not inappropriately, BUNTING FINCHES (*Passerella*), from the fact that the plumage presents markings very similar to those seen on our Buntings. They are characterised by a slender, conical beak, somewhat arched at its



THE WHITE-THROATED OR SONG SPARROW (*Zonotrichia albicollis*).

roof, and straight towards its tip; the wings are of moderate size, with the secondary quills of unusual length, the tarsus high, the toes long, and armed with large claws, those of the hind toes resembling spurs. Some species are essentially inhabitants of woodland districts, and carefully avoid the more open country; some confine themselves entirely to well-watered regions, or river banks; and others, again, frequent the sea-shore, open fields, and pastures, or replace our House Sparrows in their relation to man and his domestic life. We must, however, content ourselves with the mention of but a few principal members of this extensive group.

The WHITE-THROATED SPARROWS are inhabitants of North America, while the MORNING FINCHES, on the contrary, occupy the southern portion of that hemisphere. Both species have been classed under the name of *Zonotrichia*. These birds are furnished with a slightly conical beak, the upper mandible of which is straight and somewhat pointed, the corners of the mouth bent downwards, the lower mandible almost equalling the upper one in height. The wings are of

moderate length, reaching as far as the upper tail-covers ; the tail itself is of middle size, and formed of small feathers ; the tarsus is high, the toes long, and furnished with large claws but slightly bent. The plumage is soft and thick. Both species closely resemble the European House Sparrow in their habits, living in and about the villages, and subsisting upon various kinds of seeds, which they search for on the ground. Their nests are built in the neighbouring trees, upon which, also, they generally pass the night.

THE WHITE-THROATED SPARROW.

The WHITE-THROATED or SONG SPARROW (*Zonotrichia albicollis*) is six and a half inches long, and nine across the wings, the female somewhat smaller ; the upper part of the head is of a dark brown and black brown, intermingled with a mixture of black and grey, and divided by a light greyish-brown stripe, marked with dark and light spots ; a similar whitish-brown stripe passes over both eyes, towards the back of the head, and under this is a dark brown streak running in the same direction ; the cheeks and lower part of the throat are ashy grey, the upper portion and chin white, divided from the dark grey tint beneath by a black line. The mantle is of a reddish grey, the feathers being marked with black streaks ; the shoulders and wing-covers are blackish brown, the lower portion of their feathers bordered with reddish brown, and their end tipped with yellowish white, forming two irregular light borders to the wing. The throat of the female has less white upon it, and the wings are not so profusely marked with yellow.

The White-throat is found throughout the whole of America : Audubon tells us that it is a constant summer visitor in Louisiana and other Southern States, seldom, however, remaining longer in those parts than from March to September ; but in the more central provinces it would seem to prolong its sojourn to a later period. No sooner do these welcome visitors arrive than every hedge and fence is alive with them ; they form parties consisting of some forty or fifty birds, and fly down from time to time upon the surrounding district in search of food ; hopping gaily about as they peck the small grass-seeds that constitute their principal nourishment, and hurrying back to their perch at the first intimation of danger. Nothing can be more amicable than the terms on which they seem to live ; the time between their excursions over the field is passed, not in noisy strife, but in pouring forth a constant flow of song, so sweet as to please the ears of the most indifferent or unmusical listener. At early dawn the little community is roused by a peculiar shrill warning cry, somewhat resembling the syllable "twit ;" this we have heard uttered during the night, when no doubt it is intended as an intimation that all is well. Should the day be warm, the whole flock seek shelter in the woods, and disport themselves upon the branches of the wild vine, rarely, however, flying to any great distance from their usual haunts. With the first approach of spring the States are deserted for the more northern portions of the continent. Richardson found the nest of this bird, in the month of July, under the trunk of a tree that had fallen, and tells us that it was formed of grass, with a bed of feathers and hair in its interior ; on his approach the mother bird did not fly away, but ran noiselessly over the ground in the manner of a lark, thus leaving the eggs, which were green, spotted with reddish brown, fully exposed to his view. The White-throated Sparrow is a plump little fellow, and often becomes extremely fat, the latter quality adding materially to the value in which its flesh is held as an agreeable article of food, not only by man but by Sparrow-hawks and other enemies. When caged, the voice of this bird is heard in its full sweetness, and it continues during the entire spring and summer to sing, even until night has set in, as is its habit in its native land.

THE MORNING FINCH.

The MORNING FINCH (*Zonotrichia matutina*), as the Brazilian species has been called, is eminently distinguished for its powers of song. In size it is somewhat smaller than its North American

brother, not exceeding five and a half inches in length : its appearance much resembles that of our Reed Bunting : the head is grey, striped with black ; the nape of the neck a rusty red ; the back brown ; the feathers have a light tip, and their shafts broadly marked with black ; the throat is white, with a streak of black at the sides.

Large numbers of these birds frequent the villages of South America, and pass the day seeking for food, like our Sparrows, from amongst the offal in the streets, perching at night and early morning upon the roofs of the houses, and pouring forth their sweet enlivening song. The nest, which is large, and usually placed in a bush in some neighbouring garden, is built of dry straw, hair, or feathers, and is generally found to contain four or five greenish-white eggs, marked very thickly with spots of a light red colour. Other species are met with in North America and in Asia.

We have selected another North American species as the type of a distinct group of Bunting Finches (*Spizella*), the members of which are recognisable by their conical beak, compressed at its sides, which curve slightly inwards ; their wings are of moderate length, the third quill being the longest. The tail is but slightly excised, the feet large, and the legs covered with small scales ; the plumage is soft, but not particularly striking in its hues.

THE TREE BUNTING FINCH.

The TREE BUNTING FINCH (*Spizella Canadensis*) is rather more than eight inches long and eight inches across, the wing and tail each measuring rather more than two inches. In the plumage of such birds as have attained their full beauty, the top of the head is of a light reddish brown ; the mantle is of the same colour intermixed with black ; the quills greyish brown, bordered with yellow, and the wings surrounded by two white lines ; the chin, throat, and lower part of the neck are a light grey, the breast and belly greyish white, shaded upon their sides with yellowish brown, and marked with a deeper tint. A light grey stripe passes over the eyes towards the back of the head ; the iris is greyish brown ; the beak blackish brown upon the upper mandible and tip of lower one, the remainder of the latter being yellow ; the feet are of a deep flesh colour. The female closely resembles her mate in plumage ; but the young are by no means so brightly tinted as the parent birds.

The Tree Bunting Finches are met with in large numbers throughout North America, though they will not breed in every locality that they frequent, the more northern portions being, we believe, preferred for that purpose. Like most of their congeners, these birds pass the winter months in flying about the country in company with Buntings and a variety of other Finches, seeking food upon the hedges and trees, whose seeds constitute their principal nourishment, and sheltering themselves during very severe weather by creeping into such low bushes as are thickly surrounded with long grass or dry plants, thus affording a defence against the keenness of the wind. They generally arrive in the more southern States at the commencement of winter, and gradually disappear as spring returns. The breeding season is in May, and during that time they frequently attain a power of song of which they are incapable when not inspired by the wish to attract the attention of their mates, whose favour they endeavour to win by alternately chirping and singing throughout the entire evening. The day is spent in hopping about on the ground, and in the evening they disport themselves with wonderful agility upon the branches of their favourite trees. Their flight is rapid and undulating. The nest, which is usually constructed against an upright branch or stem, is formed of coarse grass, lined with slender fibres or hair. The brood consists of from four to five eggs of a uniform dark blue. Shortly after the young are fledged, the whole party attach themselves to a large flock of their congeners, in whose society some few weeks are passed preparatory to their winter migrations. The food of this species consists of a variety of seeds, berries, and insects.

THE PRAIRIE BUNTING FINCH.

The PRAIRIE BUNTING FINCH (*Passerculus savannus*) is one of the most numerous members of this group; it is distinguished by its short conical beak, the upper mandible of which is short; by its rounded wings, having the third and fourth quills longer than the rest; short graduated tail, moderate tarsus, and soft velvety plumage. Upon the upper portion of the body the feathers are of a pale reddish brown, presenting somewhat the appearance of being spotted, owing to the darker tint upon the shafts; the lower parts are white, marked upon the breast with small deep brown spots, and the sides are streaked with the same colour. The beak is dark brown upon the upper mandible, the lower one a shade paler; the eyes are brown; the feet of a light flesh colour. The length of this bird is five and a half inches, and its breadth eight and a half inches. The female resembles the male, but her plumage is lighter in its tints.

We learn from Audubon that the Prairie Bunting Finch is one of the most beautiful and widely distributed of its kind. It is met with in the Northern States from October to April, inhabiting fields and woodland districts, and living chiefly upon the ground, where its movements are extremely nimble, and resemble those of a mouse; indeed, it only uses its wings when closely pursued, or suddenly alarmed: its flight is irregular but continuous. This species seems to prefer high grounds at no great distance from the coast, and is rarely found inhabiting the interior of woods and forests. During the winter these birds unite themselves to flocks of their congeners, generally passing the day in flying about in search of food in the fields or gardens, and sleeping at night upon the ground. The nest, which is constructed of hay, and lined with some finer materials, is usually placed in a hole upon the ground, or else under the shelter of a bush or high tuft of grass. The eggs, from four to six in number, are of a pale blue colour, marked with purplish-brown spots, which occasionally take the form of a wreath at the broader end of the shell. In the more central States these birds breed twice, whilst farther north they do not lay more than once in the year. The Prairie Bunting Finch is by no means suitable for domestication, as it is almost entirely without voice; but it affords a not unpleasing article of food, both to man and to its still more formidable enemies, the Falcon and Mink.

The SHORE FINCHES (*Ammodromus*) are likewise included in the family of Bunting Finches. They are recognisable by their slender, elongated, pointed beak, compressed at its edges; their wings and tail are of moderate length, with the feathers variously coloured at their extremities.

THE SEA BUNTING FINCH.

The SEA BUNTING FINCH (*Ammodromus maritimus*) is about six or seven inches long and from ten to eleven inches across the wings. The upper portion of the body is greenish brown, the breast ash grey, the throat and belly white, the bridles and a streak on the top of the head dark grey; a yellow line passes over the eyes. The wings are yellow, bordered by a broad crooked line of brown, the beak and feet are brown, the eyes dark brown.

This very remarkable species does not resemble a Finch in its mode of life, but dwells like a Sandpiper upon the sea-shore, and passes its time in running nimbly and rapidly at the water's edge, or climbing about among the reeds with the agility of a Reed Bunting. Its principal nourishment consists of shrimps, small crabs, sea snails, and little fishes, this food imparting to its flesh a flavour of train oil, so generally observable in most sea birds. Marshes producing reeds and high grass, and well covered with sea water, are the favourite resorts of these birds, and there they build their nests, care being taken to place them in some tuft of grass that is beyond the reach of the waves; the little cradle is formed of coarse grass lined with a bed of finer quality; the eggs, from four to six in number, are greyish white, spotted with brown. As far as we can learn, they breed twice in the year.

THE BUNTINGS.

THE BUNTINGS (*Emberizæ*) form the connecting link between the Larks and the Finches proper, and constitute a family extremely rich in species, all presenting a striking resemblance to each other. These birds are characterised by their thick bodies, their wings of moderate length, of which the second or third quills are generally the longest, and by their large tail formed of broad feathers, its termination being either straight or slightly furcated; the feet are short, the toes long, and the hinder toe furnished with a large spur-like nail. The beak, which we regard as the distinguishing feature of this family, is short, conical, and pointed, thick at the base, but much compressed towards its tip; the upper mandible is somewhat narrower than the lower, by which it is slightly overlapped, the cutting margins are strongly bowed inwards, and bent down at a sharp angle towards the gape. Implanted in the palate of the upper jaw there is, moreover, a bony protuberance, which is received into a corresponding cavity in the under jaw; the gullet is enlarged, but can scarcely be said to form a crop, and there is a muscular gizzard.

The Buntings are essentially inhabitants of the northern portions of the earth, but are replaced elsewhere by birds of very similar character. They mostly frequent low, thin brushwood, or beds of reeds, preferring such localities as are in the immediate vicinity of water, or delight in fertile pastures; some species are met with on mountains, others in valleys, but all agree in avoiding forests or thickly-wooded districts. Though we must acknowledge that these birds cannot be regarded as particularly active, or possessed of very excellent endowments, they are by no means deficient in natural gifts, and their capacity, if not remarkable, is quite equal to the position they are called upon to fulfil in the economy of nature. All the species of this family are of social disposition, associating with Finches and Larks, and living in large flocks except in the breeding season, and sometimes even during that period they keep at no great distance from each other, although every little couple has its own nesting place, the immediate neighbourhood of which no other bird is permitted to approach. They exhibit no fear of man, frequently taking up their abode in the immediate neighbourhood of his dwellings, and paying constant visits to his barns, farmyards, gardens, or stables. Most of these birds are migratory, and but few remain for any great length of time in the localities they have selected for breeding-places. Their food consists during the summer of grasshoppers, beetles, caterpillars, and other larvæ, besides flies, gnats, and similar insects; in winter they prefer farinaceous seeds, those of an oily nature being carefully avoided; they eat very largely, and soon become extremely fat. When in search of food they generally alight upon the ground, over which they hop and walk with considerable activity; their flight is undulating, and their song monotonous, the call-note consisting of one prolonged cry. The nest is generally built in a hollow, but is sometimes placed slightly above the surface of the ground, and simply formed of straws and roots lined with fine grass, hair, or feathers. The eggs are from four to six in number, spotted and veined with a dark colour; both parents assist in the work of incubation, and in providing for the little family when fledged. The Buntings were regarded in ancient times as a valuable article of food, and many species are still caught in great numbers for the table in the more southern countries, whilst in the north birds or beasts of prey are the only enemies they have to fear.

THE CRESTED BUNTING.

The CRESTED BUNTING (*Gubernatrix cristatella*), which we have selected as well worthy of notice, is a South American species. This beautiful bird strongly resembles the rest of the family, differing

from them, however, in the inferior elongation of the nail upon the hinder toe, and in the fact that it possesses an upright tuft of feathers at the back of its head. The plumage is thick and matted, in the manner observable in most Buntings, the male and female closely resembling each other in this respect. In both birds the back is of a greenish shade, the shoulders and exterior tail-feathers being bordered with yellow; the top of the head and throat are black. In the male the lower part of the body and a line over the eyes are yellow, whilst in the female the breast is grey, the belly and rump pale green, and the cheek white, as is a line that passes over the eyes; the beak is grey, the feet black. Azara gives the measurement of this species as eight inches in length and its breadth twelve inches, the wing four inches, and the tail three and a half inches.

We are unluckily but little acquainted with the habits of this bird when in its native land. The author just quoted, however, tells us that it chiefly frequents the countries watered by the River La Plata, and the southern portions of Brazil, living, as do its congeners, upon such bushes as are at no great height, keeping for the most part on the ground, and rarely perching upon trees or flying to any distance. During the breeding season the Crested Buntings live in pairs, and at all other times in small parties, which are very frequent visitants to the native gardens and farmyards in search of the seeds and insects upon which they principally subsist. Large numbers are frequently caught and sent to Europe, where they are known under the name of the "Green Cardinal." They are often allowed to fly about the gardens in summer, but a warm cage is necessary during winter, as, being tropical birds, they cower together and shiver at the first breath of our autumnal blasts. When caged, they may be reared upon various kinds of bird-seed, finely-chopped meat, ants' eggs, worms, and salad. In disposition they are generally social, and may be safely allowed to consort with other birds, except during the breeding season, when the males are outrageously violent and quarrelsome, fighting and tearing each other until one or both of the combatants are killed or severely wounded, the conqueror continuing to maltreat its victim long after it has been completely *hors de combat*, despite all the endeavours that may be used to drive it from the spot. A nest described to us was built of the stalks of heather, woven together like a basket, and without any softer lining in its interior. The voice of the Green Cardinal is both powerful and agreeable.

THE GREY BUNTING.

The GREY BUNTING (*Miliaria valida*) is one of the largest of its family, the length of the body being seven and a half inches, the breadth across the tail twelve and a quarter inches, the wing four inches, and the tail three inches. The female is not quite so large as her mate. The plumage of this species is extremely simple in its coloration; the body is a dark grey, the lower portion, as far as the breast, being marked with white or yellowish white, and the sides with brown. The exterior tail-feathers are of uniform grey, the iris dark brown, the beak greenish yellow, and the feet horn colour. The female is exactly like her mate. The young are darker than the old birds, and the spots upon the feathers larger. The Grey Bunting is not only distinguished by the simplicity of its plumage, but by its comparatively large, strong beak, furnished with a protuberance on its roof; its feet are weak and its wings short; it is likewise remarkable for the shortness of the claw upon the hinder toe.

The Grey Buntings inhabit the greater part of Europe, either as permanent residents or as birds of passage, appearing in the largest numbers in the more southern portions of the continent: they are likewise met with both in Egypt and the Canary Isles. Fields and pastures are the localities they prefer, and they but rarely make their home in the neighbourhood of forests or in mountain districts. This bird has a clumsy and unwieldy appearance, as a glance at its stout, powerful body, combined with weak legs and short wings, will at once show; indeed, when upon the ground it

looks eminently ungraceful, as it bends itself nearly double, flapping with its tail as it hops slowly from place to place. When in the air it flies with difficulty, the short, whirring strokes of its wings producing an undulating kind of motion. The song of this Bunting has nothing to recommend it, being in sound not unlike the noise produced by a stocking machine, from which fact this species is in many places known as the "Stocking Weaver." Still, however displeasing to our ears this performance may be, the birds themselves are highly delighted with their own music, accompanying their notes by a variety of gesticulations, and thus appearing to give utterance to sentiments that their very limited gamut does not permit them otherwise to express.

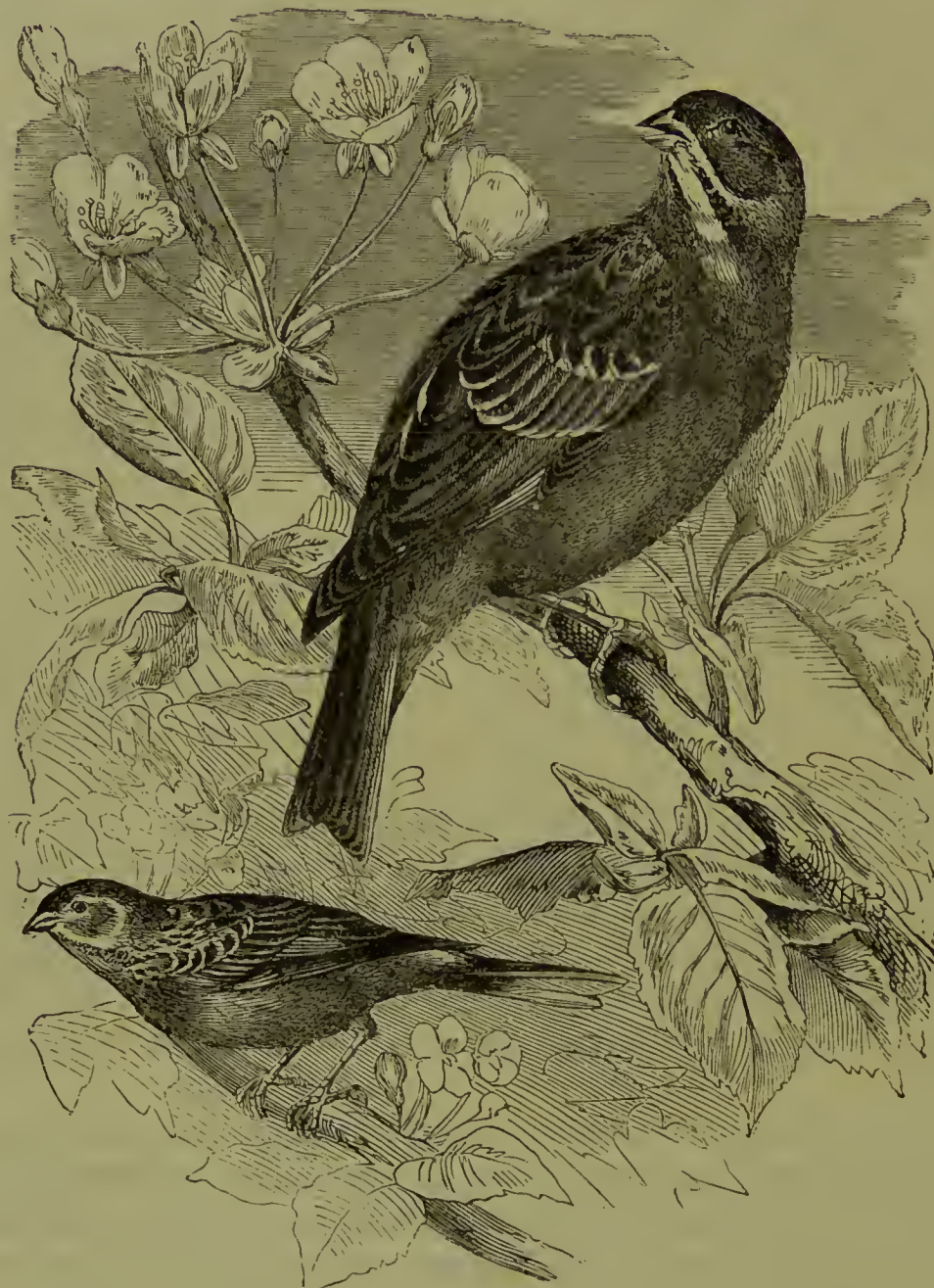
The breeding season commences in April. The nest is generally placed in the grass or amongst a group of plants, and is built of straw and dry leaves, lined with hair and other elastic materials. The eggs, from four to six in number, have a delicate pale grey or dirty yellowish shell, marked with dull purple spots, veins, and lines that are very close together at the broad end. The young are fed upon insects, and are fully fledged by May, when the parent birds at once proceed to undertake the care of a second family, only joining the rest of the flock when the work of incubation is completed. The flesh of the Grey Bunting is considered excellent; it is therefore much sought after by man, whose example is followed by falcons, rats, foxes, and other animals.

THE GOLDEN BUNTING

The GOLDEN BUNTING, or YELLOW BUNTING (*Emberiza citrinella*), is to be met with in the same parts of our continent as afford a home to the species last described, from which it is distinguished by the beauty of its plumage, and the comparative slenderness of its beak. The Yellow Bunting is about six and a half inches long, and from ten to ten and a half inches in breadth; the wing measures three and a quarter inches, and the tail two and three-quarter inches; the plumage of the male is admired for its markings and the brightness of its tints; the head and lower portion of the neck are of a bright lemon yellow, and the breast and belly streaked with reddish brown; the sides of the breast, rump, and mantle are of a vivid rust colour, the latter being streaked with dark brown; the throat is tinted with a mixture of olive green and reddish yellow, and the wings and tail are bordered by two lines, formed by the yellowish tips of the feathers; the iris is brown, the beak blueish, and the feet of a deep flesh colour. The female is by no means so handsome as her mate.

Unlike the Grey Bunting, this species is frequently found at a considerable altitude, and is very numerous upon the Swiss Alps: it generally, however, prefers woodland districts, where it hops about with an agility and grace far exceeding that of its grey brother, whom it also much surpasses in the quality of its voice. During the entire summer Golden Buntings are seen flying over the country either in pairs or small parties; but no sooner does spring approach than the little couples creep under some low bush or bushy plant, and commence their preparations for a young family, generally building their nest with fine grass or some similar material, and enlivening their work by a constant flow of song, that has been freely translated into a number of sentences appropriate to the business upon which they are employed; these jubilant sounds are uttered whilst perched upon a high branch, from which the bold songster will look down upon the approach of a man without exhibiting any alarm. The brood consists of from four to five eggs of a dirty white or reddish colour, veined and spotted with a darker shade. Both parents assist in the work of incubation, and feed the young exclusively upon insect nourishment; should the season be favourable, these birds will breed twice or thrice in the year. When the rearing of the several families is completed, young and old congregate into one large flock, and fly about the country in company with Larks, Finches, and Thrushes, for whose society they appear to feel a wonderful predilection, which is, however, not so peaceful in its nature as to prevent

innumerable squabbles, though these rarely become serious. On the approach of winter, the flocks are compelled to seek their food in the neighbouring fields and farmyards, their visits being by no means welcome to the proprietors, who, nevertheless, but rarely take any means to protect themselves against such petty marauders.



THE ORTOLAN OR GARDEN BUNTING (*Emberiza-Glycospina hortulana*).

THE ORTOLAN.

The ORTOLAN, or GARDEN BUNTING (*Glycospina hortulana*), is a member of this family; in size it is somewhat smaller than the Golden Bunting, its body not measuring more than six inches in length; the span of its wings is about ten inches, the wings three inches, and the tail two and a half inches. The female is not quite so large as her mate. Among the Ortolans the sexes are but little distinguishable by their plumage, in which a reddish brown generally predominates. The head, nape, and front of the neck are grey, the throat, stripe upon the cheeks, and a small circle round the eyes of a straw colour. The back is marked with long dark streaks, the wing-quills are brown, the secondaries being bordered with light brown, and the rest with light red, as are also the tail-feathers; the exterior tail-feathers have a long white patch upon their inner web. The plumage of the female is spotted and

duller in its tints than that of the male, which, however, resembles her in these respects during the winter months. The iris is brown, and the feet and back of a reddish grey.

The Ortolan is found throughout the greater portion of the European continent, and is extremely common both in South Norway and in Sweden, as also in Southern Italy and on the eastern coast of Spain. It is well known in Holland, England, France, Russia, and some parts of Germany; it inhabits Asia as far as the Altai Mountains, and, though rare, is occasionally met with in Northern Africa. In its life and habits the Garden Bunting closely resembles its golden-plumaged relative, and even surpasses it in its powers of song, although the voices of the two are very similar. The nest is



THE BLACK-HEADED BUNTING (*Euspiza melanocephala*).

built upon the lowest branches of some thickly-foliaged tree. The eggs, four or six in number, are whitish red or reddish grey, streaked and spotted with blackish blue. The Ortolan is entitled to our notice from the fact that it enjoys and always has maintained a very high reputation as a delicate and costly article of food. By the Romans these birds were always tended with the greatest care, in order that their flesh might attain its full perfection, and lamps were kept constantly burning near their cages at night, that they might eat with as little intermission as possible. This mode of fattening them is still employed in Italy and the South of France, as well as among the Greek Islands, where Ortolans are kept in great numbers. When ready for the market, their necks are wrung, the birds steeped in boiling water, and then packed by hundreds in small casks filled with highly-spiced vinegar, after which precautionary measure they are exported to foreign markets, where they always command a high price. At the present day, the gamekeepers in many parts of Germany are allowed to appropriate the proceeds of the sale of these delicate birds, whose flesh resembles that of the Snipe, but is, in the opinion of the epicure, even more delicate.

THE RED BUNTING.

The RED BUNTING or MEADOW BUNTING (*Emberiza-Glycospina cia*) is, in our opinion, a more beautiful species than the much-prized Ortolan, its plumage being as noticeable for its elegant markings as for the brilliancy of its colours. The principal tint is reddish brown; the throat, head, and upper part of the breast are of a delicate grey; the cheeks and ears are surrounded by a black ring, which is enclosed by two white lines, the back is marked by a series of spots running in stripes, and the wings are ornamented with two light borders. The markings in the plumage of the female are less distinct, and her throat lighter and more spotted than in the case of her mate. The iris is dark brown, and the beak blueish black upon the upper mandible, the lower mandible is light blue, and the feet are horn colour. The length of this bird is about six and a half inches, its breadth nine and a half inches, and the wing and tail two and three-quarter inches. The female is not quite so large. The Red Bunting is an inhabitant of the South, only frequenting such parts of Germany as are watered by the Rhine; but is numerous in Austria, Spain, Italy, and Greece, spreading from these countries over Asia, till it reaches the Himalaya Mountains, where we hear it is very constantly met with; indeed, our own observations lead us to suppose that this species prefers mountain districts, avoiding open plains, and is an inhabitant of the Swiss Alps. There can be no question that precipices abounding with large fragments of stone afford a most acceptable shelter for the purpose of incubation, and in such localities it disports itself much in the same fashion as its congeners, but is rarely seen perching elsewhere. In its flight, general habits, and song, it is a true Bunting. The nest is generally built on and about rocks, or in fissures of the walls that surround the vineyards, with which the sides of the mountains are frequently covered. The eggs, three or four in number, are greyish black surrounded with grey lines, often arranged like a girdle round the middle, thus distinguishing them from those of the Yellow Bunting. [For drawings of the eggs of this species and of the Cirl Bunting (*Emberiza cirrus*) see Coloured Plate IV.] The parent birds breed twice in the season, and when the period of incubation is over join the large flocks of their companions, with whom they pass the rest of the year.

THE BLACK-HEADED BUNTING.

The BLACK-HEADED BUNTING (*Euspiza melanocephala*), an inhabitant of the south-eastern portion of Europe, and of a large portion of South-western Asia, is one of the most beautiful of the many species belonging to this extensive family. It is recognisable by its elongated beak, furnished with a long sharp protuberance under its roof, and by the more uniform coloration of its plumage, which differs widely in the two sexes. The Black-headed Bunting is seven inches long, and eleven and a half across the wings, the wings and tail measuring about three inches in length. The head of the male is jet-black, the back rust-red, the whole of the under part of the body of a golden colour, and the wings and tail dark brown. The female is without the black hood, the bridles are greyish brown, the back reddish grey, each feather being bordered with a lighter shade, and having a dark shaft; the under part of the body is pale yellow, and the throat of a whitish hue; the quills, wings, and tail-coverts are dark brown, edged with a lighter tint, or with brownish white; the beak is light blue, and the feet of a deep flesh colour.

The Black-headed Buntings commence their migrations about the month of November, and very shortly after leaving Europe make their appearance in the Deccan, and upper provinces of Hindostan, assembling there in large flocks, and making terrible havoc in the corn-fields, until the time returns for carrying on their work of destruction in our part of the world, where, on their arrival, they may be seen perching in crowds upon the sea shore, as they alight to rest after their long and arduous flight. We

are told by Von Mühle that these birds are so extremely dull and stupid in their disposition that the male when singing will allow himself to be approached and killed with a stick, but in other respects they resemble the rest of their congeners. The nest is usually built upon a hill side, the female burying herself as far as possible among the surrounding plants or grass, whilst her mate perches upon a neighbouring shrub or tree and cheers her with a constant flow of song. The little cradle is formed without art of the stalks of plants and leaves loosely woven together, and lined with delicate fibres of hair or fine grass. The eggs, which are laid about the middle of June, are of a pale blueish green, marked with more or less distinct green, red, or grey spots.

THE REED BUNTING.

The REED BUNTING (*Cynchrampus Schœniclus*) has been separated from the other members of its family on account of the peculiar formation of its beak, and though closely resembling them in many particulars, certainly differs from them in its habits. The Reed Bunting is about six inches long and twenty-nine broad, the wings and the tail measuring rather more than two inches. The female is not quite so large. The head and entire throat of the male are deep black, a white stripe passes from the corner of the beak towards the shoulder, uniting itself with a band of the same hue that encircles the neck; the back is brown, each feather being edged with a lighter shade, and having a dark shaft, giving to this part of the plumage a somewhat sparrow-like appearance; the rump is ash grey, the belly white, and the sides grey, marked with dark longitudinal streaks. In the female the head is brown, with markings of a darker shade, the throat dirty white, and encircled by a spotted band; the nestlings and young males resemble the mother. The eye is brown, the beak blue, darker upon the upper mandible, and light beneath; the feet are reddish grey.

This species is found throughout Europe, inhabiting every country even as far north as Lapland. It is, however, generally met with in such districts only as are near to water, or in marshy land, rich in water-plants, reeds, or willows, on or near which it makes its nest. The nest itself is frequently built on some small patch of ground, encircled by water; it is constructed of grass or roots woven neatly together and lined with cotton down taken from seeds or willows. This little dwelling is placed upon the ground in such a manner as to be hidden by the surrounding vegetation, and (about May) is generally found to contain from four to six pretty eggs, differing considerably from each other in appearance, but for the most part of a brownish or reddish tinge, with a profusion of dark brown or grey spots and veins. These birds are much attached to their young, and the mother will actually permit herself to be removed from the nest by force rather than desert her offspring. In its general attributes the Reed Bunting certainly stands superior to most of its fellows, far exceeding them in the activity it displays either when hopping on the ground or jumping from twig to twig: its flight is rapid and undulating, occasionally varied by more energetic efforts as the light and elegant bird rises swiftly into the air, where it performs a variety of evolutions, and then as speedily descends. Its song is monotonous, but far from unpleasing; its call a more prolonged note than is usually produced by a Bunting. During the summer, the food of this species consists principally of such insects as it obtains from the reeds growing in the immediate vicinity of the water, and in winter it subsists upon the seeds that abound in its favourite haunts; it is only after the breeding season that it is tempted to join company with others of its kind, and make short excursions to pilfer the neighbouring corn-fields, very much after the manner of Sparrows. On the approach of winter, it seeks refuge in a more congenial climate, visiting Spain and other southern countries in large flocks.

The SPUR BUNTINGS or LARK BUNTINGS (*Centrophanes*) constitute an extensive group that comprises many beautifully plumaged species, distinguished by the remarkable elongation of the

nail upon their hinder toe. They are all recognisable by their small beaks, with only a slight excrescence in the upper portion, by their long, pointed wings, tail of moderate length, strong feet, and the aforesaid spur, which is much bent, in some cases nearly equalling, and in others exceeding the toe in length.



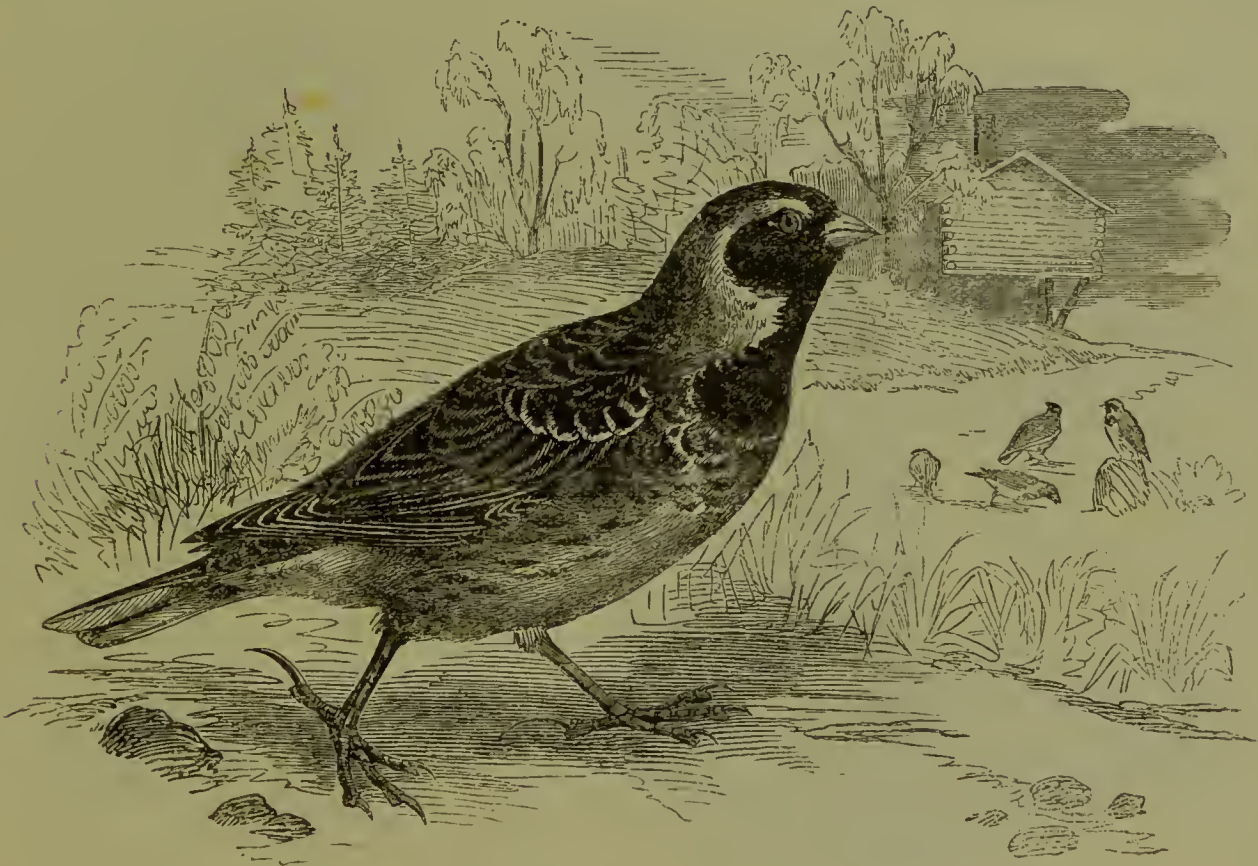
THE REED BUNTING (*Cynchramus Schaniclus*).

THE LARK BUNTING.

In the SPUR BUNTING or LARK BUNTING (*Centrophanes lapponicus*) the characteristic nail is longer than the toe itself. The plumage of the male is black upon the top of the head, and beneath the throat; the nape is a bright rust-red, marked with a reddish-white line that passes over the eyes, and lower down takes the form of the letter S; the back is brown, streaked with a deeper shade; the wings brownish black, with light borders to the small covers and individual quills; the lower part of the body is greyish white, marked upon the sides with large black streaks and spots. The female is without the black upon the head, throat, and sides, and her plumage is of a paler tint than that of the male. During the winter the black markings are frequently almost concealed under the white edges that the feathers acquire at that season. The young resemble the mother, but have long dark streaks

upon the lower portion of the body. The iris is dark brown, the beak bluish black at its tip, and the feet a greyish brown. The length of this species is about six inches, and the breadth ten inches; the wing measures three and a half inches, and the tail two and a half inches. The female is smaller than her mate.

The Lark Bunting is to be found in all the northern countries of Europe, and is extremely numerous in Lapland, its favourite haunts being mountains, barren highlands, or birch forests. Its habits are a curious mixture of those of the Lark and Reed Bunting; it runs on the ground after the manner of the former, and perches like the latter, while its flight bears a resemblance to that of both birds. The call-note is melancholy, and its sound well suited to the localities where it is heard: the song is very simple, and is, we believe, only uttered whilst on the wing. Schröder tells us that this



THE LARK BUNTING (*Centrophanes lapponicus*).

species visits Lapland about April, and at once proceeds to make its nest, which is safely concealed under the roots of a birch tree, or hidden amongst the surrounding plants; exteriorly it is formed of coarse, thick grass, and lined with soft feathers. The eggs, five or six in number, are laid about the middle of June; in shape they are elongated, and of a grey or yellowish colour, marked more or less with dark spots or lines, which are, however, occasionally wanting. As soon as the duties of incubation are concluded the little pairs unite themselves into parties, and appear during their journeyings over the country to be almost entirely without fear of man, and quite ignorant of his dangerous powers. The food of these birds during the summer months consists principally of gnats and other insects, and in winter of various kinds of seeds. The migrations of Lark Buntings rarely extend beyond the southern parts of Scandinavia, such as have visited Germany being, no doubt, stragglers that have wandered involuntarily from the rest. Naumann tells us that they constantly seek the society of Larks, and that their flesh is frequently eaten.

THE SNOW BUNTING.

The SNOW BUNTING (*Plectrophanes nivalis*), the last member of this family to which we shall call our readers' attention, is distinguished by the remarkable thickness of its plumage, and in several other respects differs from its congeners. The beak resembles that of the Lark Bunting, but the wings are comparatively long, and the tail short; the spur-like nail is likewise bent, and not quite so large as in that bird. The male is from six to seven inches long, its breadth about twelve inches; the wing four and a quarter inches, and the tail two and a half inches. Simple as are the colours in the plumage of the young male, its beauty cannot fail to excite admiration. The middle of the back and tips of the quills are black, as is the upper portion of the middle tail-feathers, and a spot upon the carpal

THE SNOW BUNTING (*Plectrophanes nivalis*).

portion of the wing; the lower parts of the tail-feathers are bordered with brownish grey, gradually shading into black towards their roots, and the whole of the remainder of the plumage is of a pure white. The iris is light brown, the beak blue at its base and black at the tip; the feet are of a brownish black colour. The head of the female is of a blackish shade, that of the young bird grey; but during the winter the head and neck are brownish grey, marked with a black crescent-shaped spot; at that season the breast is of a quieter tint, only the wings and tail retaining colours similar to those they exhibit in summer. The plumage of the young birds is a dull reddish brown, the back brown with dark markings; the wings are striped with two white bands.

This species is an inhabitant of the same countries as those frequented by the Lark Bunting, but is often found living in much higher latitudes than that bird, even breeding so far north as the islands of Spitzbergen and of Novaja Zemlja. We ourselves have met with it during the summer in Scandinavia, in the northern part of Lapland, and upon the highest of the Dovrefeld Mountains.

Rocky passes seem to afford it the localities it prefers when about to breed ; the nest, which is formed of moss and grass, lined with down and feathers, is placed in a cleft of rock, or under a large stone, the entrance to this secret retreat being made of the very smallest proportions consistent with the possibility of the parent birds slipping in and out of the nest. The brood consists of from five to six eggs, so extremely various in their colour and markings as to render any attempt at description useless. The young are fed almost exclusively with insects, upon which their parents also subsist in the breeding season, seeds of various kinds affording them nourishment during the winter.

The flocks of these beautiful creatures are remarkably numerous ; they pour in dense masses over the country, and drop like snow-flakes upon such spots as seem to offer them the food of which they are in search—indeed, so strong is the resemblance of these swarms to a snow-storm, when thus seen congregated in large numbers, that the birds are popularly called “ Snowflakes ” in St. Petersburg, where they are met with in much greater multitudes than in other parts of Europe. Many tales are told of these flocks settling down, during their migrations, on the decks of ships, in order to enjoy a short repose ; upon such occasions, however, they rise again into the air almost immediately, and continue their long and weary journey, even should they have to encounter the full violence of a contrary wind.

In its demeanour this species bears quite as close a resemblance to the Lark as to its more immediate relations. Its movements upon the ground are easy, its flight rapid and extremely light, the bird rising high into the air when about to fly to a distance, but keeping near the ground during its ordinary daily excursions. Naumann tells us that the evolutions of a flock of Snow Buntings are extremely curious, the whole party appearing to revolve around each other whilst on the wing, much after the fashion of waltzers in a ball-room—indeed, under every circumstance of their active lives they never lose their restless and unwearied activity, which even great cold or want of food seems unable to abate or restrain. The fields afford them sustenance during the winter, and over these they hover, scarcely ceasing from their flight even when occupied in obtaining food ; but should the supply from this source prove insufficient for the wants of the party, they are, as a last resource, driven into towns and villages, in order to obtain from thence provisions not to be found elsewhere. Their song is not unlike that of the Lark, and their call a shrill piping note, generally uttered whilst on the wing ; when singing, on the contrary, they prefer to perch upon a stone or bed of snow, as near as possible to the mate for whose delectation their music is intended.

THE LARKS.

THE LARKS (*Alaudæ*) differ widely in their habits from the rest of the Passerine Order, inasmuch as they reside so exclusively upon the ground, that we should feel very much surprised to see a Lark perching in a tree, or disporting itself amongst the branches.

All the various members of this family are stoutly built, with large heads, beaks of short or moderate length, long and very broad wings, short tails, and rather flat feet, furnished with toes of middle size, armed in some species with a spur-like nail : the tail, which is by no means large, is composed of twelve feathers evenly cut off at their extremity. The plumage is of a brownish shade, nearly alike in the two sexes, but varying considerably as the birds increase in age. The internal structure of the body differs in no essential particulars from that of other Passeres. The skeleton is powerful ; the bones for the most part filled with air, and without marrow ; the singing apparatus is well developed ; the lungs are large and the gizzard muscular ; there is no crop. These birds inhabit the open country, whether cultivated or not, and are most numerous met with in temperate latitudes, some preferring

fields, whilst others are restricted to steppes or desert plains. Most species must be considered as migratory, that is to say, such as are found in the more northern countries seek for sunnier climes when winter approaches, whilst those that inhabit the South may be regarded as stationary ; but in no case do these migratory excursions extend to any great distance ; and though the Larks are amongst our first visitors, their stay with us is never protracted beyond the autumn. The behaviour of all the members of this group is characterised by many peculiarities that distinguish them from other Passeres. When upon the ground they do not hop, but *step* with surprising rapidity, and their flight is remarkable for the variety of the evolutions by which it is accomplished. Should the bird be eager to reach its destination it flies in large undulating curves, produced by alternately opening and closing the wings ; but if, on the contrary, the little warbler is about to pour forth its glorious song, it darts straight into the sky, like an arrow from a bow, or else rises rapidly, but more leisurely, in a series of spiral circles until it is quite out of sight. When about to descend, it hovers for a short space in one spot, and then by a sudden plunge reaches the ground, with body contracted and wings completely closed. At other times it may be seen skimming close to the earth, or over the surface of a sheet of water, occasionally varying these several kinds of exercise or amusement by chasing its companions in buoyant and sportive flights through the air. As regards their capabilities, the Larks have certainly been highly favoured by Nature, but their intelligence is by no means equal to their other endowments. Most of the members of this family are good singers, some of them very highly gifted in that respect, and capable not only of uttering a great variety of notes, but of imitating many of the sounds they hear. All are of a cheerful and restless disposition, associating but little with other birds, and exhibiting no fear of man or his snares, except after experience of his tyranny. We have already said that Larks are rarely found on trees, but pass their lives principally upon the ground from which they procure the seeds and insects that constitute their principal food. During the summer they consume large quantities of small beetles, butterflies, grasshoppers, spiders, and larvæ ; these, with seeds of various kinds, and young shoots from the budding corn, constitute their daily fare ; at other seasons different kinds of grain, large and small, are eaten when still in the husk, thus necessitating the swallowing of sand and little pebbles in order to assist the gizzard in the labour of digestion. Water seems to be held in actual aversion by these birds ; they cleanse themselves, as do the domestic fowls, by scratching about in the dust or sand ; snow is also frequently used during the winter for the same purpose. The Larks build their nests upon the ground, or in small hollows scooped out for the reception of the little structure, which is not remarkable for beauty ; the principal object in the choice of materials being to select such as are not easily distinguishable from the ground upon which the nest stands ; dry blades of grass and leaves are generally employed for the purpose, and these are woven together with but slight attention to comfort or compactness. The brood consists of from four to six eggs, and as each pair breeds twice in the course of the year, the increase of these birds is extremely rapid ; indeed, if this were not the case, their extermination would be speedily accomplished, for their enemies are terribly numerous, those inhabiting southern countries being particularly unfortunate in this respect, as snakes and lizards are there added to the already large number of destroyers, from whose teeth and claws so many of their northern congeners are unable to escape. Man himself, however, is, after all, by far the most redoubtable of their foes ; for hundreds of thousands of these little songsters are captured annually in order to add to the list of delicacies supplied to his already over-stocked table.

The CALANDRA LARKS (*Melanocorypha*) are distinguished by their strong beaks, vaulted both above and below, and slightly compressed at the sides ; by their long wings, short tails, and the cheerful coloration of their plumage.

THE CALANDRA LARK.

The CALANDRA LARK (*Melanocorypha Calandra*), which we select as the type of this group, is the most celebrated of all the species inhabiting Southern Europe. It exceeds most of its congeners in size, the length of its body being from seven to eight inches, its breadth fifteen to seventeen inches, the wing five and a quarter inches, and the tail two and a half inches. The plumage is of a reddish brown, marked with black along its upper portion; the feathers on the wing-covers are tipped with white, thus producing the effect of two distinct white lines; the shoulder-feathers are bordered with white, and the exterior tail-feathers entirely of that hue. The under parts of the body are whitish yellow, streaked with brown along the upper portion of the breast, and the sides of the neck are marked with an irregular black spot; the eyes are light brown, the beak and feet horn colour. The

THE CALANDRA LARK (*Melanocorypha Calandra*).

coat of the young bird is of a reddish yellow upon the back, the individual feathers being edged with a paler shade. The head is marked with round spots, and with one irregular, pale black patch.

These birds abound in Southern Europe, and occasionally in the south-eastern parts of our continent; they are also met with in Central Asia, North America, Northern Africa, India, and China, being very numerous in the latter country. In Asia the Calandra Lark almost exclusively inhabits the boundless steppes, whilst in other parts of the world it shows no particular preference as to situation, frequenting agricultural districts or barren tracts with equal impartiality. Though usually of a social disposition, it separates itself from the rest of its companions during the breeding season, and watches over its little partner with most jealous care; as soon, however, as the labours of incubation are accomplished the various couples again congregate, and form large flocks. Its general habits resemble those described as common to the whole family, the principal difference being that the Calandra Lark, unlike its congeners, frees the seed or corn from the husk before swallowing it. The nest is built of dry stalks or fine roots carelessly woven together, and placed either behind a clod of earth or under a small bush, sometimes amongst corn, a small hollow being always prepared

for its reception. The brood usually consists of four or five large, round, white or yellowish white eggs, thickly covered with light brown or grey spots.

Much has been said and written in praise of the song of the Calandra Lark, but words are quite inadequate to describe the effect it is capable of producing upon the minds of all who listen as it pours forth an almost unceasing flow of sweet sounds, combining in the most surprising manner, not merely the great variety of tones constituting its own peculiar song, but the notes and music uttered by almost every other kind of bird, the whole being exquisitely adorned and blended by the little vocalist, who thus produces an ever-changeful strain, which must be heard under the wide canopy of heaven before its full beauty can be appreciated. When in a room, the whole performance is too loud to permit the hearer adequately to appreciate the versatile powers of the little songster, who not unfrequently gives utterance to a surprising flow of varied cadences, without any visible exertion of the throat, the sounds appearing, strangely enough, to proceed entirely from the beak. With us these Larks are not much esteemed as household pets, owing, as we have said, to the loudness of their voice; but in Spain great numbers are caught for domestication, the capture being generally achieved at night with the aid of sheep-bells and dark lanterns, the birds thus deluded remaining stationary, under the impression that only a flock of sheep is approaching, and thus their pursuers are enabled to enclose multitudes of them in their nets before the unsuspecting victims can escape.

THE SHORT-TOED LARK.

The SHORT-TOED LARK, or CALANDRELLE (*Calandritis brachydactyla*), is a well-known species, inhabiting Spain and Italy, and differs from that above described in the comparative smallness of its beak and very short spurs. The upper portion of the body is of a light clay colour, with a reddish tint upon the head, and a grey shade here and there upon the back; the under parts are pale greyish yellow; the wings are bordered with a darker shade than those of the Calandra Lark, and the spots on the neck are smaller and fainter than in that bird. Its length is about five and a half inches, its breadth from ten to eleven inches; the wing measures three and a half inches, and the tail from two to two and a half inches.

The Calandrelle is found in considerable numbers, inhabiting all the plains of Southern Europe, Central Asia, and Western Africa, where it frequents alike the barren wastes or cultivated districts. The Asiatic steppes and desert tracts of the South must, however, be regarded as its actual habitat, and in such localities the resemblance between the parched herbage or dry ground and the attire of the bird is so deceptive, that the little creature need but lower its head to become completely unrecognisable at the distance of a few paces from the spot upon which it stands. Such of this species as frequent Spain, commence their wanderings in the early spring, keeping together in enormous flocks until the breeding season, when they separate into pairs, each couple choosing a convenient nesting-place, which is not left until the end of summer. The flight and habits of these birds have some few peculiarities, but in most respects they closely resemble the rest of the Lark family. When upon the wing they fly in irregular curves, ascending into the sky, if we may so describe it, by a kind of *climbing motion*, and descending at once with the direct impetus and closed wings usually seen in the earthward course of their congeners. Their song has been humorously described as "patchwork," and so it actually is, for the performance is never consecutive, each long, shrill note being followed by an entirely distinct and unconnected sound, the effect of which is far from pleasing, especially as their notes are often repeated some twenty times in succession without the slightest variation beyond an occasional change of key. Yet, despite the poverty of its own song, this bird is capable of imitating the voice of its feathered companions with considerable skill, and may be heard pouring forth its disjointed notes almost during the whole day, both when upon the ground, or while mounting upwards to the sky.

The nest of the Calandrelle is carelessly constructed, but very safely concealed from view ; the eggs are grey or pale yellow, marked more or less distinctly and very variously with reddish brown. At the commencement of September the annual migrations of these Larks have fully commenced, and flocks of them may be seen winging their way in immense masses towards the wooded steppes of Central Africa, literally forming clouds that obscure the sky, or when they alight covering the entire ground, very frequently for half an hour at a time. Jerdon mentions their appearance in India in very similar terms, and tells us that on one occasion he brought down no fewer than twelve dozen of these birds with two shots from a double-barrelled gun—a statement for the truth of which we can fully vouch after our own experiences in Central Africa. Thousands are also destroyed in Spain, but the increase is so large as to prevent any serious diminution of their numbers.

The BLACK LARKS (*Saxilauda*) form a group very closely resembling the Calandra Larks, but recognisable by the peculiarity of their plumage and the Finch-like form of their beaks.

THE BLACK LARK.

The BLACK LARK, or MOOR LARK (*Saxilauda Tatarica*), is about seven and a half to eight inches long, the wings five and a half, and the tail three inches. The coat of the old male bird is coal-black, shaded, after moulting, with white, both upon the back and lower portion of the body ; indeed, at that time the plumage may almost be described as *chequered*, each feather having a white border, which gradually wears away as the season advances. The beak is yellow, tipped with a dark shade, the feet brown, and the eyes light brown. The coat of the female is brown, marked with a deeper tint, the under portion of the body being white : the young resemble the mother. Swarms of these Moor Larks are found inhabiting the steppes of Central Asia, where they frequently linger from year's end to year's end, never leaving except to wander to somewhat higher ground, in search of a spot upon which they can escape the snow that drives them from the lower parts of the country. Eversmann tells us that he saw them in large flocks upon the Asiatic steppes during the winter, but with the particulars of their summer life in Asia we are entirely unacquainted, except that the seeds of various plants and insects constitute their favourite food. As to its general habits, this species closely resembles the Calandra Lark, with which it frequently associates. The brood consists of from four to six pale blue eggs, marked with reddish spots ; the nest exhibits but small trace of care in its construction.

We must here again call our readers' attention to the admirable manner in which the colours of the feathered tribes are adapted to the particular situations in which their life is to be passed. Seeing that the Black Larks could only exist where the soil is of a similarly dark character, another race of these birds has been appointed to cheer the barren desert with their presence, coloured so as to harmonise and blend with the light and sandy plains that they frequent ; such are—

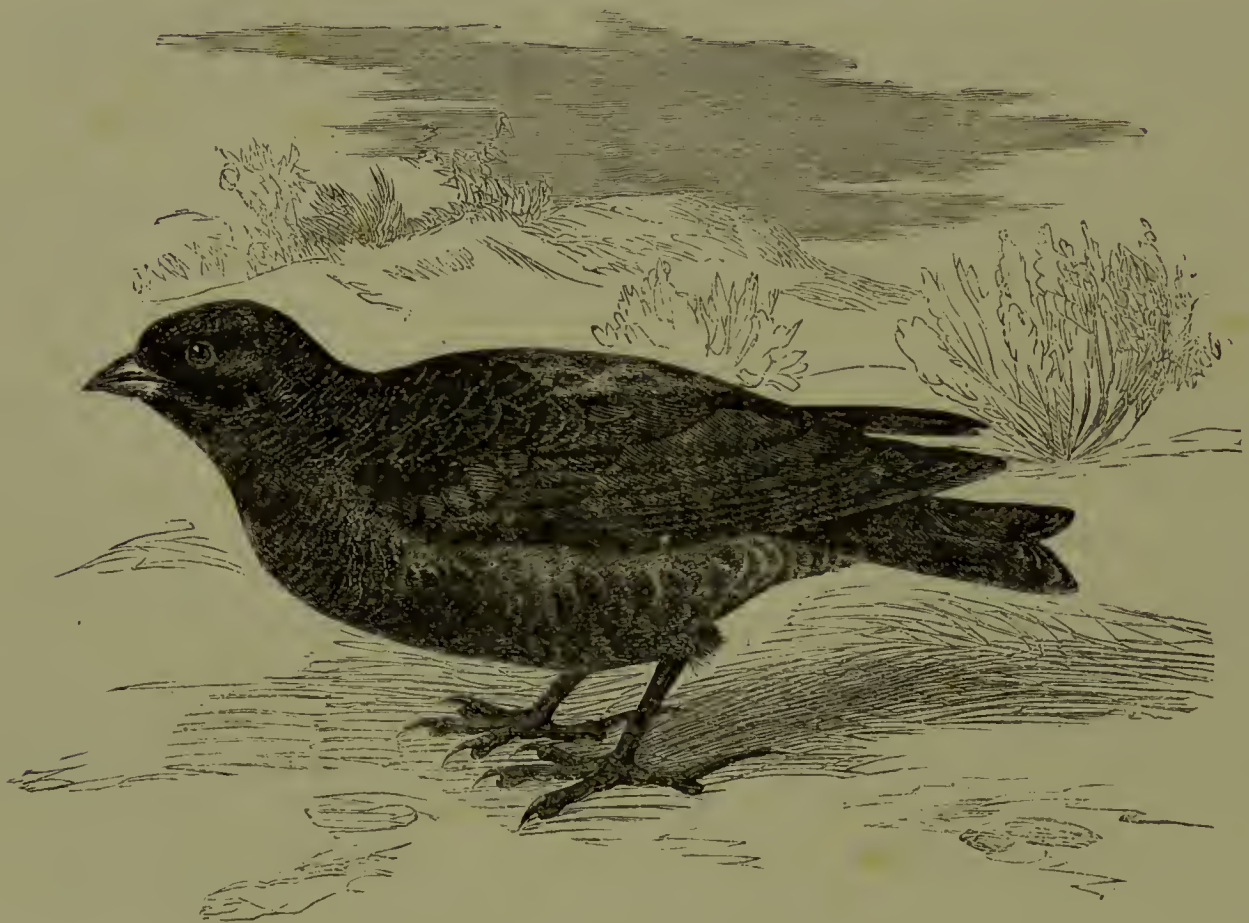
The SAND LARKS (*Ammomanes*), easily recognisable by their strong beaks, very powerful, broad, long, and pointed wings, comparatively large and excised tail, and sand-coloured plumage ; all the various species closely resemble each other in these particulars.

THE DESERT LARK.

The DESERT LARK (*Ammomanes deserti*) is one of the smallest members of this group, not being more than five and a half inches long, and eight and a half broad. The upper part of the body is of

a sandy yellow or grey, marked upon the throat by fine dark lines ; the black tail and wing feathers are edged with reddish brown.

We ourselves have met with these birds in all parts of the African Desert, even in the sandy plains called by the Arabs *Hammadas*, or *Red Lot*; indeed, such spots as these are selected by preference, the little creatures seeming carefully to avoid the oases, or any districts that bear the impress of cultivation, only leaving the burning wastes to wander unmolested through the ruined temples of the Pharaohs, to which their dismal cry seems to lend an additional shade of gloom. In their movements the Desert Larks exhibit an activity and adroitness that enables them to travel over the loose sand upon which they live with surprising rapidity. Their disposition is quiet, and so extremely engaging, as to cause them to be regarded by the Arabs with peculiar favour ; as to their



THE MOOR LARK (*Saxilauda Tatarica*).

requirements, they must certainly be numbered amongst the most easily satisfied of living creatures. a little sand and a few stones are all they need to form a home, and should the locality selected by a pair of Desert Larks afford them a few blades of coarse grass, their utmost desires are fulfilled. Day after day you may visit the spot, and there they will be found perching upon the same stone, apparently as happy and contented as birds can be. Early in the year they commence the labours attendant upon incubation, concealing their nests with so much care amongst the stones, that all our attempts to discover them have proved fruitless. Nothing can exceed the fearlessness with which man is regarded by the Desert Lark ; it will frequently allow the approach of a stranger without the slightest demonstration of alarm, having learned by experience that their attractive manners render them safe at least from the pursuit of the Arab, if not of the naturalist.

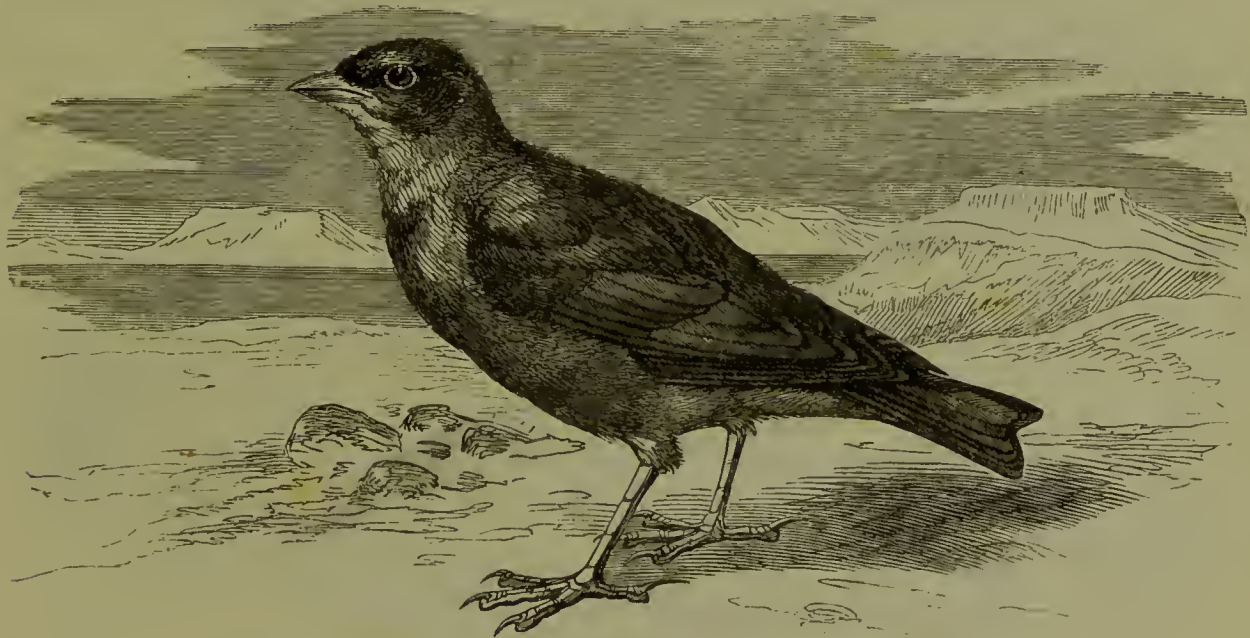
The BUNTING LARKS (*Pyrrhulauda*) may be regarded as the dwarfs of the Lark family.

They inhabit a large portion of Africa, including the eastern coast, and are remarkable not merely for the smallness of their size, but for their short thick beak and very large wings.

THE BLACK-HEADED BUNTING LARK.

The BLACK-HEADED BUNTING LARK (*Pyrrhulanda leucotis*) is black upon the head and lower portion of the body; the back is reddish brown, the cheeks white, as is a line that passes over the nape; the hips are dirty white, the wing-feathers brown, whilst those of the tail are half white and half brown; the eyes are light brown, and the beak and feet light yellow. Its length is five inches, the breadth nine and a quarter inches; the wing measures nearly three, and the tail about two inches.

This lively, elegant little bird is found extensively in all the African lowlands, beyond sixteen degrees north latitude, flying about freely in the immediate vicinity of man, and only avoiding such localities as high mountains or dense forests. In its habits it is by no means so brisk and alert as the Desert Lark, and its appearance anything but trim, as it runs or sits with drooping head, and



THE DESERT LARK (*Ammomanes deserti*).

wings hanging loosely from its side; but its flight is easy, and its movements when upon the ground far from clumsy, and very rapid. Its song is extremely simple, consisting generally of a monotonous repetition of the syllables *tit-tit*, and is uttered both when perched and when upon the wing. Our knowledge respecting the incubation of this species is extremely scanty, and we can only say that the little mates are much attached to each other, keep themselves separate from their kindred during the breeding season, and rejoin them when their parental duties are accomplished, forming parties which occasionally become very numerous. The plumage of the young differs considerably from that of the adult birds.

THE ALPINE LARK.

The ALPINE LARK, or SHORE LARK (*Phileremos alpestris*), is one of the liveliest members of its family, both as relates to its plumage and disposition, and may be regarded as forming, with a few other species, a distinct group remarkable for the elongation of the body, and two appendages resembling feathery horns, with which the back of the head is furnished. The beak is straight, weak, and of moderate size; the wings long, with the second, third, and fourth primaries almost of equal

length ; the feet are strong, the toes of moderate size, and the hinder toe armed with a slightly curved, spur-like claw. The plumage of this bird is variegated in its tints ; the length of its body is about seven inches, the breadth thirteen ; the wings measure four, and the tail three inches. The Alpine Lark is an inhabitant of Northern Europe, and is easily recognisable by its elegant and striking appearance. Upon the back the feathers are of a reddish grey ; the wings and tail black, bordered with dark brown ; the breast and belly of a very pale yellowish grey, so light as to be nearly white. The markings upon the head are extremely beautiful : the brow is of a dull yellow, the region of the ear yellowish grey, enlivened by a bright brimstone-coloured line, which passes over the eyes, and gradually spreads till the throat and sides of the neck are of the same colour. The upper part of



THE ALPINE LARK (*Phileremos alpestris*).

the breast is decorated with a triangular patch of velvety black, the cheeks, base of the beak, a streak upon the head, and the tufts being of the same rich deep shade. The eye is light brown, the beak and feet of a blueish tint. The coat of the nestlings is of a pale brownish grey upon the back, all the feathers edged with light yellow ; the belly is white, and the individual feathers furnished with a pale yellow border ; the wing and tail feathers are brown.

The name of the Alpine Lark is derived, not from the Swiss Alps, but from the mountains of Siberia, and the rest of Northern Europe, where, at the present day, it is met with in large numbers, though until within the last fifty years it was considered to be one of the rarest birds in our continent. According to our own observations, this species is not found at a greater elevation than 400 or 500 feet above the level of the sea. In Lapland it lives near the coast. These Larks quit the more northern countries at the end of October, and return about April, when they at once commence

preparations for their young. The nest is most carefully constructed, and neatly lined with fine blades of grass, cotton wool, and other delicate materials, a slight hollow being prepared in the ground for its reception; in this the little cradle is so well concealed as to be only discoverable by a practised eye. The brood consists of from four to five eggs, of about the same size as those of the common Field Lark; they are usually yellow, and covered with very fine markings of a deeper shade, which take the form of a wreath around the broadest end; varieties are, however, occasionally found exhibiting grey streaks, or brown hair-like lines. In its habits this species closely resembles the Field Lark; indeed, the movements of the two are so exactly similar as to render it almost impossible to distinguish between them, either when on the ground or in the air: the Alpine Lark, however, sings either when perched or sitting upon a stone, and not, like its more southern representative the Field Lark, only when soaring in the air. It subsists chiefly upon seeds and insects, feeding its young principally upon the gnats and larvæ abounding in its favourite resorts.

The LARKS PROPER (*Alaudæ*) are distinguished from the birds just described by their more slender beaks, short wings, and simple plumage, but closely resemble them in other particulars.

THE TUFTED LARK.

The TUFTED LARK (*Galerita cristata*) may be regarded as holding an intermediate position, by reason of the comparative strength of its beak, the shape of which, however, points it out as belonging to the Larks Proper; it is, moreover, easily recognisable by its compact body and tolerably strong feet, furnished with an almost straight claw upon the hinder toe, also by its large head and blunt wings, lax plumage, and, above all, by the crest it bears upon the vertex. The plumage is extremely various, and we are as yet unable to decide whether this diversity indicates distinct species, or is to be attributed to other causes; suffice it to say that these alterations in the colouring are usually accompanied by very observable differences both in the song and manners of the birds. We shall not here attempt to enter into a discussion on this point, but shall only observe that in one part of Egypt, where the soil is very dark, a species of Lark is found which, from the depths of its hues, has been called *Galerita nigricans*, whilst in the desert, not a mile from the same spot, a similar bird is met with almost of a golden colour. We mention this to show that in such a case the climate can in no way be the cause for so great a dissimilarity. In this group, therefore, every variety of tint, from deep yellowish grey to pale whitish yellow, may frequently be seen in birds apparently belonging to the same species. The Tufted Lark, so frequently met with in Germany, is usually reddish grey upon the upper part of its body; the throat is pale yellowish white, the rest of the under portion is brownish yellow, every feather being marked with a black line upon its shaft, except those upon the throat, wings, and a streak which passes over the eyes; the wings and tail-feathers are black or dark brown, bordered with rusty red. In the young birds, all the feathers upon the upper part of the coat are edged with white, and spotted at the tip with a dark shade; the eye is brown, the upper mandible deep grey, the lower one light grey, and the feet red. The length of this species is about six and three quarter inches, its breadth twelve and a half inches, the wing three and three quarter inches, and the tail two and a half inches. The female is not quite so large as her mate. We shall speak of this group collectively, as relates to their habits and mode of life, for what applies to one applies to all. The Tufted Larks are spread extensively over the whole of Europe, Central and Southern Asia, and Africa, being most numerous in the southern parts, where they not only inhabit the villages, but also frequent mountains and barren plains; whilst, as we have already mentioned, those of Africa are as constantly seen in the desert as in the cultivated districts. In Europe they may be considered as constant winter visitors to our barns and houses, hopping about

them in company with Sparrows and Finches in the hope of obtaining food. Except during the period of incubation, all are quiet, unobtrusive birds, easily distinguished from our Field Lark by their crest, which is always held erect upon the head, but closely resembling their congeners in their flight and movements upon the ground. Their song is sweet and silvery in its tone, and though somewhat melancholy, is much admired; many esteem the species found in the desert as the most gifted in this respect, but we imagine this merely to proceed from the fact that any pleasing sounds have a double charm when heard amidst the gloom of those dreary and usually silent wastes. Seeds, tender shoots, and insects constitute their principal food, the latter also forming the principal nourishment of the young birds. The nest, which is built in fields, vineyards, or gardens, is placed upon the ground, and



THE TUFTED LARK (*Galerita cristata*).

so well concealed as to be not easily found, though often situated in localities much frequented by man. The eggs are yellow or reddish white, marked with numerous grey or yellow brown spots; the first brood consists of from four to six eggs, the second seldom of more than three or four. Both sexes assist in the work of incubation, taking their place upon the eggs by turns; the young are hatched in about a fortnight, and are carefully tended by both parents; they remain close to the nest until they can fly with ease, taking refuge within it in case of danger. Compared with many members of the Lark family, the birds belonging to this group may be said to live in safety from the pursuit of man, as their flesh is not much esteemed as an article of food.

THE WOOD LARK.

The WOOD LARK (*Corys alauda arborea*) is distinguished by its inferior size, small wings, large, broad, and rounded tail, and scarcely perceptible tuft upon its head. Its length never exceeds six

inches, its breadth is eleven and three-quarter inches, the wing measures three and a half inches, and the tail two inches. The female is smaller than her mate. The plumage is brownish yellow, shaded with rusty red; the belly white, striped with black as far as the breast; the four exterior tail-feathers are white, or of a yellowish shade; a light blue line passes over the head at the base of the upper mandible, running above the eyes, and around the crest. The feathers on the back of the young have a dark border.



THE SKYLARK (*Alauda arvensis*).

This beautiful bird is found extensively throughout Southern and Central Europe, and a large portion of Central Asia; its favourite haunts are, however, restricted to such barren plains and bare mountainous tracts as would offer few attractions to other members of the family. In its movements the Wood Lark is extremely vivacious and active; it runs with short steps over the ground, carrying its body and crest so erect as to give it an air of great self-importance and trimness. Should its promenade be disturbed by the appearance of a Hawk or other bird of prey, the little creature instantly lays itself flat upon the ground, if possible in a small hollow, and in this attitude will remain so still and motionless until the danger is past, as frequently to escape even the keen scrutiny of its formidable pursuer. Unlike its congeners, this species passes a considerable portion of its life

perched amongst the branches of trees, from which peculiarity it derives its distinguishing name of Wood Lark. The breeding season commences with the spring, and numerous and violent are the battles between the male birds during this period of the year, for as their numbers usually exceed those of the females, it is a matter of no slight difficulty for each to find a mate. This important point, however, once settled, the males regain all their wonted gentleness, and confine their activity entirely to rendering themselves agreeable to the partner they have obtained with so much courage and perseverance. The nest, which is very compact and elaborate in its construction, is usually built in the grass, often under the shelter of a pine or juniper tree, and is composed of dry blades of fine grass. In shape, the little fabric resembles the half of a ball; its interior is warmly and neatly lined with soft materials for the reception of the eggs; these are usually four or five in number, white, and thickly strewn with grey or light brown markings (see Coloured Plate X., fig. 37). The female alone broods, but she is carefully tended during her seclusion by her mate, who also assists in taking care of the young, which are very soon capable of leaving the nest. No sooner is it vacated than another brood replaces the first, and it is only when the work of incubation is fully accomplished that the whole family unites to form a small flock, and fly about the country in search of food. During these expeditions many visits are paid to newly ploughed or stubble fields; and even during their autumnal migration, which commences about the end of October, entire days are often spent in exploring such spots in search of the precarious supply of seeds and insects, upon which they rely for food. These migratory excursions frequently extend as far as Africa, but by February the birds are with us again, and may be sometimes seen flying and singing cheerfully upon our mountains before the snow has fully disappeared from the surface of the ground. The song of the Wood Lark is extremely beautiful, and has inspired many eloquent writers with a theme; indeed, the impression made upon the mind of a traveller passing through the dreary plains inhabited by these birds, may well be of a most enthusiastic description, when, amidst the deep silence that surrounds him, this glorious little songster suddenly rises into the air, and commences pouring out an uninterrupted flow of exquisite music as it soars above him for half an hour at a time. Those who have been fortunate enough to listen to the Wood Lark in the stillness of the night, speak still more warmly of the effect its voice is capable of producing. We would, however, by no means lead our readers to suppose that the song of this bird can bear comparison with that of the Nightingale; nevertheless, whilst the latter is only heard during two months of the year, the former enlivens its native haunts from March to October, and, when caged, sings with such unflagging zeal and spirit as to render it a great favourite with all who have kept it in their aviaries. Large numbers of Wood Larks are captured by the mountaineers during the night by means of nets spread over the ground; few, however, survive captivity for more than two or three years.

THE SKYLARK.

The SKYLARK, or FIELD LARK (*Alauda arvensis*), is distinguished from its congeners by the slender formation of its body, its weak short conical beak, and its somewhat pointed wings, the third quill of which is longer than the rest; its tail, of moderate length, is slightly excised at the extremity, and its delicate feet are furnished with somewhat short toes. The length of this species is about six inches and three-quarters, its breadth twelve inches and a quarter; the wing measures from three to four inches, and the tail from two inches and a half to two and three-quarters. The colour of the plumage is reddish brown upon the back, the under part of the body being white, the head distinctly spotted with brown, and the sides marked with dark streaks; the bridles and sides of the neck are of a lighter colour than the rest of the feathers; the exterior tail quills are white, as is the outer web of the second quill; the eye is reddish brown, the beak blueish grey, and the feet reddish grey.

The Skylark abounds over the whole continent of Europe and its contiguous islands ; in Asia it is met with as far north as Kamschatka, and we think that it may now be numbered amongst North American birds, Audubon having introduced many species into that country, in the hope of their becoming naturalised. Though somewhat rarely seen, Field Larks have been known to reach Egypt in the course of their migrations. We ourselves have seen large flocks inhabiting the Castilian highlands, and they are said to be plentiful in Algiers and Greece during the colder parts of the year. In England the Lark is always regarded as the harbinger of spring, as with us it has usually returned and selected its home by the end of April. In its behaviour this species closely resembles its congeners, but, unlike some of them, it is extremely restless, running or flying from one spot to another with a constant change of flight or step, at one moment walking slowly, repeatedly ducking its head as it goes, and the next instant darting along with the rapidity of a plover. When in the air its evolutions are most varied. While singing it usually hovers gently, or rises rapidly with regular strokes of its wings, as it carols forth its well-known lay, which may be frequently heard at intervals from early morning until after sunset, the little songster appearing quite regardless of all other pleasures or desires, as it rises higher and higher towards the clouds, which sometimes seem to hide it from our view. The night is passed upon the ground, but at the first dawn of day, this "herald of the morn," as it has been aptly called, is amongst the first to greet the rising sun, its matin song being uttered whilst still perched upon the spot that has afforded it a shelter for the night. Like the bird we last described, the Skylark lives at peace with its brotherhood until the time for choosing a mate, at which season regular pitched battles are of constant occurrence between the males, who pull and tear each other in the air until the whole party fall struggling to the ground, usually, however, without any serious injury, and quite ready to renew the combat at the first sound of their antagonist's voice ; the females, meanwhile, not only seem to enjoy the scene, but sometimes assist the mate they would prefer.

The nest is constructed about the beginning of May, the birds generally selecting a corn-field as most suitable for building purposes. They choose a piece of ground some two or three hundred paces in extent, and on this they settle, the whole party being as near together as the required space will allow, so that they thus form a kind of little colony. Male and female both assist in excavating the small cavity necessary for the safe deposit of the nest, which is built of stubble, blades of grass, or fibrous roots, the interior being occasionally lined with horsehair. In this humble retreat the female lays five or six eggs of a greenish yellow or reddish white tinge, covered with brown or grey spots (see Coloured Plate X., fig. 37). Both parents assist in the work of incubation, but the largest share devolves upon the female. The young leave the nest very shortly after being hatched, and seek shelter in the neighbouring fields, the old birds being immediately busied with the cares of a second family. Of all the numerous enemies by which the Skylarks are surrounded, man himself stands pre-eminent ; hundreds of thousands are annually destroyed, merely to furnish a dainty food ; and we learn from a continental writer, Elzholz, that they are so much sought after in Germany, that on one special occasion to which he refers 403,455 dead Larks were sold in the town of Leipsic alone, although, he tells us, by far the greater number caught in that part of the country were disposed of in the villages before they could reach the markets in the city. These birds are attracted by any light of unusual brightness, and are sometimes allured to their destruction by a rapidly revolving mirror. Amongst their feathered enemies the hawk known as the "Hobby" is the most formidable—indeed, so extreme is the terror evinced by the little songsters on its appearance, that, if escape by other means is impossible, they will seek refuge in a passing wagon or similar hiding-place ; we ourselves knew an instance in which a Skylark, driven to desperation, sought protection from its dreaded foe upon the pommel of a horseman's saddle.

The STILTED LARKS (*Certhilaudæ*) are a group inhabiting Africa, remarkable for their elongated bodies, small heads, and large beaks, the upper mandible of which terminates in a slight hook ; they are likewise distinguished by their comparatively short wings, long, rounded tail, and very high tarsi, furnished with toes and nails of moderate length.

The SPUR LARKS (*Macronyx*) are distinguished by their straight, short, and powerful beaks, elevated tarsi and feet, furnished with large toes, and by their variegated plumage. The large, somewhat curved nail upon the hinder toe must, however, be regarded as the peculiar characteristic of these birds.



THE SENTRY LARK (*Macronyx capensis*).

THE SENTRY LARK.

The SENTRY LARK (*Macronyx capensis*) has received its name from the peculiar cry that it utters when disturbed, which sounds exactly like the *Qui vive!* employed as a challenge by French soldiers on guard. The plumage of this species is more variegated than that of almost any other Lark, the feathers upon the back being deep grey, edged with a lighter tint, and the exterior tail-feathers of a whitish shade half way up the inner web ; the lower part of the body is of almost uniform reddish brown ; a streak over the eyes is deep orange, as is the throat, the latter being surrounded by a black line ; the eye is reddish brown, the beak dark grey, and the feet of a yellowish shade. The plumage

of the female is paler, and the spur upon the foot smaller than in the male. The length of this bird is about seven inches, the wing four, and the tail two and three-quarter inches.

We learn from Le Vaillant that the Spur Lark is found abundantly throughout the whole of Southern Africa, where it principally frequents grassy plains, or the immediate vicinity of streams or brooks. The nest, which is formed of fine roots or similar materials, is concealed under a bush, and the brood consists of three or four blueish-white eggs, marked with reddish-brown spots, most thickly strewn over the broad end. The flesh of this species of Lark is much esteemed as an article of food by the settlers in South Africa.

The COURSER LARKS (*Alæmon*) may be regarded as the connecting link between the Larks and the Cursorial birds. Their bodies are much elongated, the beak remarkably long, weak, and perceptibly curved; the tarsus is double the length of the middle toe and nail; the tail is long, and straight at its extremity, and the wing comparatively short, the second, third, fourth, and fifth quills being longer than the rest.

THE DESERT COURSER LARK.

The DESERT COURSER LARK (*Alæmon desertorum*) is one of the members of this group with which we are most familiar, as it is frequently seen in Europe. In this bird the head and neck are of a greyish cream colour, the back and wing-covers being somewhat yellower; the belly is white, and the breast marked with a few blackish-brown primary streaks; the quills are white at their roots, and black at the tip, whilst the secondaries are entirely white, striped near the middle with black, thus producing a double white border to the wing; the centre feathers upon the tail-covers are of the same colour as the back, but black at the shaft, the exterior feathers having the outer web white, and the rest black, with a yellowish edge. The eye is light brown, the beak and feet pale grey. Both sexes are alike in plumage, but the female is not quite so large as her mate. The length of this species is about eight inches, the wing four and a half, and the tail two inches.

According to our own observation, this very remarkable bird is met with extensively between Cairo and Suez, but is by no means numerous in the desert, and quite unknown in the region of the steppes; we occasionally saw it in small parties, but usually living in pairs, which appeared to associate peacefully with each other. As we have said, the Desert Courser Lark much resembles the Cursorial birds in many particulars. It runs with great rapidity, in the same manner as the Isabella Courser (*Cursorius Isabellinus*), and when in flight hovers or rises into the air with a bold stroke of the wings. When about to alight it poises itself for some moments, and then, closing its wings, comes rapidly to the ground, repeating this form of ascent and descent several times in quick succession, apparently solely for the purpose of affording pleasure to its admiring mate. The song of these birds is loud and twittering. The nest we have never seen, and our information as to the food upon which they subsist is very slight. Insects, we believe, constitute their principal diet, and they probably eat some kinds of seed. They exhibit no fear of man, and may often be seen running almost tame about the streets and court-yards of Suez and Cairo.



RAVENS (*Coraciostres*).

WE are now about to introduce our readers to a race of Birds, so nearly related to the *Passeres*, that many naturalists have regarded them as constituting a subdivision of that order. We, on the contrary, following our intention of rendering our classification as simple as possible, have thought it best to assign them an entirely separate place, principally in consideration of the unmistakable peculiarity of their plumage.

The order CORACIROSTRES, according to this view, comprises a large number of species, varying in size from a Raven to a Finch, but all presenting the same characteristic structure: all have elongated yet powerful bodies, large heads, short necks, and wings of moderate size, or slightly lengthened, pointed or rounded at the tip. The tail is formed of twelve feathers, and is very various in its shape and size; the feet are strong, the toes short, armed with stout claws, and the tarsi covered with scaly plates; the beak is long, occasionally equal to or even exceeding the head in length, but sometimes much shorter; its shape is almost straight, more or less conical, sometimes arched at its roof, the upper mandible being slightly bent towards the point, but not terminated by a hook. The plumage is short in proportion to the size of the bird, and moderately compact and thick. In some cases the ornamentation is very peculiar, individual feathers being much elongated and stripped of their web. Very great diversity is observable in the coloration of these birds: black is generally predominant, but yellow and white are frequently employed, and green, brown, or red occasionally but more rarely intermingled; these various colours being often harmonised and enriched by a peculiar and splendid metallic brilliancy. The internal structure of this race bears a strong resemblance to what we have seen in the Passerine Order. The skeleton is powerful, many of its bones being filled with air. The back-bone very constantly consists of twelve cervical, eight dorsal, ten or eleven pelvic, and seven to eight caudal vertebræ. The vocal muscles of the lower larynx are well developed. The gullet does not enlarge into a crop, and the gizzard is never so muscular as in the Passerine birds; the various senses are very equally developed, and the brain is large. According to some naturalists, the Ravens must be regarded as the most perfectly constructed of the feathered tribe; and we are not inclined to dispute this opinion: certainly, few birds can compare with them either in capacity or bodily powers, for they run, fly, or climb with equal facility, and possess a remarkably flexible and copious voice; indeed, some families display such an extremely high degree of development both as regards their intelligence and strength, as to justify us in saying that they possess the attributes of the Parrots and Falcons combined. In the habits of the smaller species of this order there is much that reminds us of the Finches or Buntings; but its larger members are distinguished by many peculiarities. They are for the most part dexterous thieves, achieving their object with a boldness and cunning that is truly surprising, frequently stealing, as it were, for the mere pleasure afforded them by the act, rather than from any necessity for the object purloined. All parts of the world are inhabited by various tribes of this extensive division; some of them may perhaps be regarded as for the most part frequenting woodland districts; others are equally at home upon mountain ranges or lowlands, the sea-coast, or barren plains; and they are constantly met with either in the solitary desert, or dwelling in the immediate vicinity of man. Southern countries, however, afford the most congenial home to these birds, which, though appearing in all latitudes, are more numerous in the warmer portions of the earth than in the north. They live everywhere unmolested by man,

obtaining a plentiful supply of food in any circumstances, seeing that their easily satisfied stomachs are equally ready to appropriate all kinds of nourishment. In their conduct the Ravens display an intelligence that cannot fail to interest every observer, and most curious are the means by which they seem to impart and receive hints or suggestions from each other. Some species will assemble at a given hour upon a certain tree, and enter at once, as it would seem, upon a full discussion of the events of the day, the old birds instructing the younger members of the party, who appear to profit by the lessons thus received; superior instinct or talent is sure to find promotion amongst them, the most intelligent being at once recognised as leaders of the rest of the flock. Their habits are social, but each bird may be said to lead an independent life, though ready at a moment's notice to join its companions in defence or attack. The structure of their nests is very various; some are placed apart, and separate from each other; others in close vicinity; the only interruption to the general harmony occurring during the breeding season, when the busy couples are all clamouring and struggling for favourite building places or necessary materials. At such times those who cannot take what they want by force, employ wonderful dexterity and cunning in abstracting the coveted object, should its possessor be for one moment off his guard. The brood consists of from four to six eggs. Both parents assist in the work of incubation, the male stealing occasionally from the side of his mate to pass an hour in chattering or singing with a select party of friends, perched upon some neighbouring tree. The young remain for a considerable time under the care and tuition of their parents, who rarely brood more than once during the summer.

For the most part, the RAVENS must be considered as eminently useful, destroying, as they do, large quantities of noxious insects, and thus rendering great service to man. Some of the larger members of the order, on the contrary, are distinguished by a cruelty and rapacity that render them extremely destructive to the smaller quadrupeds, causing them to be regarded as deserving of human vengeance, and fit objects for relentless persecution. When caged, the Ravens are many of them extremely interesting, as they will not only learn to imitate tunes, but some of them acquire the power of repeating whole sentences with as great facility as does the Parrot, and soon become perfectly tame. The flesh of many species is well flavoured, and the feathers are employed for a variety of purposes.

We shall divide the order of RAVENS into four groups, all distinctly recognisable by some marked peculiarity of structure, but resembling each other in their general mode of life and habits. These divisions we shall distinguish as the STARLINGS, the BIRDS OF PARADISE, the RAVENS PROPER, and the PLANTAIN EATERS, assigning to the Starlings the first place, as being superior to the rest in their vocal powers.

THE STARLINGS.

THE STARLINGS (*Sturnidæ*) must be ranked among the smaller birds belonging to this order, and are eminently distinguished for their high endowments. Their body is elongated, the wings of moderate size, the tail seldom of any great length, usually short and straight, the tarsus of medium height, the beak long, conical, and weak. The plumage is composed of small harsh feathers, much variegated in their hues, and frequently presenting a brilliant gloss. With the exception of Australia, the members of this family are distributed over the entire world; each continent and country possessing its peculiar species: America, more especially, is particularly rich in different races of Starlings

The YELLOW STARLINGS (*Icteri*) are birds varying in size from that of a Crow to that of a

Finch. Their bodies are elongated, but powerfully built, the beak conical, the wings and tail of moderate length, the tarsi strong, and the plumage soft and brilliant, black, gold, or red preponderating in its coloration; the beak is rounded and thick towards its base, and without any notch or hook at the apex, its upper portion being prolonged like a shield among the feathers of the forehead. The fourth quill of the wings is longer than the rest; the tail, which is half covered by the wings when the bird is at rest, is rounded or graduated towards its extremity; the tarsi are longer than the middle toes, and covered in front with scaly plates; the toes are of moderate length, armed with strong, bent, and pointed nails. In some species the feathers on the top of the head take the form of a tuft, and in others the cheeks are left bare. All the members of this group are social, cheerful, and active; some of them are rich in song. Their favourite haunts are in the woods, where they subsist principally upon insects, snails, fruit, or seeds. Their nests are built with care, and display considerable artistic skill.



THE BOBLINK (*Dolichonyx oryzivorus*).

The TROOPIALS (*Agelaii*) include the smallest members of the last-mentioned group. In these birds the roof of the beak is quite straight, and its margins bent at an angle towards the gape; the hinder toe is furnished with a spur-like claw. The plumage of the young differs considerably from that of the parent birds, and is very various in its colours and markings.

THE RICE-BIRD.

The BOBLINK, or RICE BIRD (*Dolichonyx oryzivorus*), possesses so many features in common with both Finches and Starlings as to render it difficult to decide amongst which it should really be placed. This species is very numerous in North America, where it is much detested on account of the serious damage it does to the fields of ripe grain. The principal characteristic of the group of RICE EATERS to which this bird belongs is their strong, conical beak, which is of moderate length, and much compressed towards the sides, the upper mandible being narrower than the lower portion, and lying, as it were, enclosed within its edges. The body is compact, the head large, the wings of

moderate size, the second quill being longer than the rest; the tail is of great length, and each individual feather composing it terminates in a sharp point; the feet are not large, but powerful, and the plumage compact and glossy. The body of the Boblink measures seven inches, its breadth being about eleven inches, the wing three and a half, and the tail two and a half inches. The plumage varies considerably at different seasons of the year. During the period of incubation the male is black upon the head, the lower portion of the body, and the tail; the nape is brownish yellow, and the feathers upon the back black, with a broad yellow margin; the shoulders and rump are of a yellowish white; the wing-covers and quills are black, bordered with yellow. The eye is brown, the upper mandible dark brown, and the lower one blueish grey; the feet are light blue. The female is smaller than her mate, of a pale yellowish brown upon the back, the shafts of the feathers being marked with a dark tinge; the lower parts of the body are of a pale greyish yellow, the sides streaked in the same manner, as is the back; the bridles are brown, and a yellow line passes over the eyes; the quills and tail-feathers are much lighter than in the gala dress of her mate. During the winter months the male bird wears a coat closely resembling that of the female. The young are similar to the mother, but all their tints are greyer and paler.

When upon the ground, the movements of this species may be described as being more like a step than a hop; its flight is light and graceful, and its powers of climbing amongst the stubble by no means inferior to those of the Reed Sparrow. The Boblink (so called from its well-known cry) appears regularly in North America during the summer months, visiting the West Indies and the northern parts of South America in the course of its migrations. About May these birds begin to make their appearance in New York by small parties, which gradually increase in numbers until they literally swarm throughout the whole State—indeed, Audubon tells us that it would be impossible to find a field unoccupied by these destructive visitors. Even the breeding season does not interfere with their social relations, for the nests are built near together upon the ground, each pair, however, keeping possession of a distinct territory, in the centre of which the little home is made with much art, amidst the grass or stubble. The cares of the brood devolve entirely upon the females, their mates, meanwhile, disporting themselves over the neighbouring fields, and making the air resound with their endeavours to rival each other in the beauty of their song, which is so rich and varied in its tones as frequently to lead the hearer to imagine that he is listening to the voices of many singers, when in reality the sounds are produced by a solitary bird. Wilson describes the performance of the Boblink as resembling a series of notes struck upon all parts of the pianoforte in rapid succession, and tells us that the effect, though strange, is extremely pleasing. When perched, the male accompanies its song by a variety of animated gestures and movements of its wings. The eggs are laid about the end of May; they are from four to six in number, white, and thickly marked with dark blue or black spots irregularly distributed. Each couple breeds but once during the year. The young are fed upon insects: they rapidly attain their full size, and are ready to join their parents in the work of destruction about to commence. No sooner is the period of incubation over than the nature of these birds seems to undergo an entire change. The male completely loses his song, and doffs his brilliant coat, which is replaced by a comparatively quiet dress, resembling that of the female, and all exchange their hitherto harmless demeanour for a life of active and really formidable mischief. In vain are every means adopted by the inhabitants to scare the destructive flocks from their fields of young corn; hundreds of thousands are shot, but with little result beyond driving the enemy from one district to take refuge in another, and it is only when the work of devastation has been fully carried out that these enormous swarms leave the locality to carry on their terrible raids in another part of the country. It would seem as though the hatred with which the farmers regard this bird had made them entirely overlook the service it renders them

during other seasons of the year by the enormous quantities of insects it consumes ; even the great beauty of its song has not induced them to tame it.

The MARSH TROOPIALS (*Agelaius*) are quite as numerous, and almost as destructive as the members of the last-mentioned group. In these birds the beak is long, conical, very pointed, and slightly compressed, the body powerful, the wings of moderate size, their second and third quills being longer than the rest ; the tail moderate, rounded at its extremity, and the plumage soft and glossy.

THE RED-WINGED TROOPIAL.

The RED-WINGED TROOPIAL (*Agelaius Phœniceus*) is almost as abundant in North America as is the Rice Bird, and, though its plumage is extremely simple, it is remarkably beautiful. During the breeding season the coat of the male is deep black, except upon the shoulders, which are of a rich scarlet ; the eyes are brown, and the feet and beak blueish black. The female is blackish brown upon the upper part of the body, the belly greyish brown, each feather being edged with yellowish grey ; the throat and cheeks are light greyish yellow, streaked with a deeper shade ; its body is about eight and a half inches long, its breadth thirteen and a half inches ; the wing measures four and a half inches.

These birds are found extensively throughout the whole of North America, and appear regularly in the United States during the summer months, but are most numerous in the northern provinces. Audubon tells us that the "Redwings" leave the south as soon as spring appears, performing their migrations in flocks of considerable extent ; the males leading the way, and singing almost without intermission, as though to induce the females to follow them ; the different parties rest for the night upon the tops of high trees, and greet the morning with an animated song before again proceeding on their journey. No sooner have the females made their appearance than the work of choosing a mate commences, a proceeding attended with no small difficulty, as the males far exceed the females in number. When mated the little couple retires from the rest of the flock, and sets about the construction of the nest, which is built of dry reeds, lined with horsehair or fine grass, and placed under a bush at the edge of a pond or in a marshy field. The eggs (see Coloured Plate IV., fig. 28), from four to six in number, are of a light brown colour, spotted with a darker shade. The male bird exhibits the greatest anxiety for the welfare of its little partner, and, should they be molested, will fly close up to the intruder, as though to divert attention from the nest, or else will perch immediately above its mate, uttering such pitiful cries of distress as will sometimes deter the unwelcome visitor from approaching nearer. These birds produce two broods during the summer, the second being ready to leave the nest by the beginning of August, when they congregate in flocks, numbering many thousands, and immediately commence their depredations in the fields, destroying the crops in the most terrible manner, despite the utmost efforts used to drive them from the locality, which they only quit when the corn becomes too ripe to suit their requirements. Like most of their congeners, they usually pass the night amongst the beds of reeds, which afford them temporary protection from the attacks of the infuriated farmers, by whom incredible numbers are slaughtered, without making any apparent diminution in the flocks, which occasionally may literally be said to darken the sky. Except during the time when the corn is young and tender, the habits of the Red-wing are by no means such as to render them objects of persecution, for they may be seen hopping after the plough, and clearing the field of multitudes of noxious and destructive insects ; these services, however, are entirely overlooked by the American husbandmen, who have no eyes for their beauty and no ears for their song, but pursue them with unrelenting hostility.

The COW-BIRDS (*Molothrus*) constitute a group of Starlings distinguished by their short, conical, sharply-pointed beaks, the upper mandible of which is almost straight, and compressed towards its edges; the wings are tolerably long, the three first feathers being of nearly equal length. The tail is of moderate size, and straight at its extremity, the individual quills becoming broader towards their tip; the tarsi are compact, but rather high, and the soft plumage, which in the young bird is brown, at a later period turns to a bright metallic blue.

THE COW STARLING.

The COW STARLING (*Molothrus Icterus peccoris*) is the best known, or, perhaps, we should say, the most *notorious* of these birds. The plumage of the male is simple in its coloration, but by no means without beauty; the head and neck are brown, the rest of the plumage brownish black, with a blueish gloss upon the breast, and a green and blue shimmer on the back; the eye is dark brown, the beak and feet brownish black. The length of this species is about seven inches, and the span of its wings eleven and a half inches; the female is rather smaller, and her colour almost entirely brown, the lower part of the body being of a lighter shade than the back.

The Cow Starlings inhabit North America, where they frequent such marshy spots as are at no great distance from pastures containing cows or horses, whose backs they relieve from many tormenting parasites. In the northern parts of the United States these birds make their appearance in small flocks about the end of March, frequently associating with parties of red-winged Troopials, and gradually increasing in numbers until their swarms become really formidable; by the end of September they have left the country in company with many of their feathered companions. Though bearing a great resemblance to their congeners, there is much that is decidedly peculiar in their habits, more especially as relates to the rearing of their young. Anything like family affection would seem to be quite unknown amongst them, both male and female having many mates, and living in such entire indifference as to each other's movements that the withdrawal of one of the party does not seem to excite the slightest attention. Their eggs, moreover, are laid, like those of the Cuckoo, in the nest of any other bird who may for a moment have left its young charge; on more than one occasion we have been much amused in following and watching a female Cow Starling as she flew anxiously about in the woods, until she succeeded in finding a nest into which she might steal and deposit her eggs during the absence of its owner. Should this, however, not be possible, force is often used to drive the weaker bird from its brood until the object is accomplished. The egg of this species is small as compared with the size of the mother; it is usually pale blueish grey, marked with dark brown spots and streaks, which are the most numerous at the broadest end (see Coloured Plate IV., fig. 3). According to Audubon, the Cow-bird never deposits more than one egg at a time; the resulting progeny, he tells us, is soon hatched, and receives every care from its foster parents, who are, however, deserted by their strange nursling as soon as it has strength enough to fly.

The YELLOW or GOLDEN STARLINGS (*Icteri*) are distinguished from the rest of the family by their superior size, and long, slender beaks, which are straight at the ridge and sharply pointed towards the extremity; the wings are of moderate size, the tail long, graduated at the sides, and rounded at its tip; the legs are strong, the toes powerful, and armed with sharp and crooked claws. The plumage is principally of a yellow colour, the female in this respect resembling her mate, but the young birds never exhibit the bunting-like markings that distinguish others of the family.

The "YELLOW BIRDS," as they are usually denominated, are inhabitants of the southern portions of America, though by no means rare in its more northern countries, and must be regarded as holding the same place in the Starling family as the Weaver Birds do amongst Finches, for their nests are built

with great artistic skill, and frequently hang in considerable numbers from the same tree or branch. In their habits they are extremely social, and are much prized by the Americans, either when in their favourite woods or confined in a cage, on account of their gay plumage and the beauty of their song. The food of these birds consists principally of insects and fruit, but at some seasons of the year they will also eat corn and devour large quantities of the softer kinds of maggots and larvæ, for which they search amidst the refuse scattered on the roads.

THE JAMAICA YELLOW BIRD.

The JAMAICA YELLOW BIRD, or SOFFRE (*Icterus Jamaicæ*), is one of the most beautiful members of this family, found, as its name implies, in the islands of the West Indies, but likewise abounding in



THE RED-WINGED TROOPIAL (*Agelaius Phœniceus*).

Brazil and Guiana. In this species the head, throat, back, and neck are black, the nape and lower portion of the body bright orange. A portion of the hinder secondary quills is edged with white underneath, and the small wing-covers are marked with orange at the shoulder; the lower wing-covers are of a paler yellow. The beak is brilliant black, with a lead-coloured spot upon the lower mandible; the feet are of a blueish flesh colour, the eyes light yellow; the ophthalmic region is bare, and of a greenish hue; the coat of the female is lighter than that of her mate, and the young birds are of a still paler tint; the beak of the latter is brown, the feet pale yellowish brown, and the wings edged with broad grey lines. The length of this bird is about ten inches, its breadth thirteen, and the wing and tail four and a half inches.

All observers who have seen this magnificent species in its wild state speak of it with enthusiasm. The Prince von Wied describes it as looking like a flashing flame as it darts hither and thither amongst the dark foliage; its movements are lively and elegant, and its voice so flexible as to be capable of

imitating the songs of many other birds. The depths of the forests afford these brilliant creatures the shelter they prefer, and thither they resort in pairs during the period of incubation ; at other seasons of the year they fly about in small parties, which subsist principally upon insects or various kinds of fruit, and do great damage to the orange and banana trees. We learn from the same author that he found the nest of a Yellow Bird woven between the branches of a tree and hanging some eight or nine feet above the ground ; the little structure was formed of small twigs, and in shape resembled a ball, the entrance being through a hole in the side. Schomburghk tells us that the wooded banks of the rivers resound morning and evening with the melodious but plaintive notes of this sweet songster, and



THE COW STARLING (*Molothrus pecoris*).

that it is sought after by the settlers for purposes of domestication, though its life in confinement is but of short duration : this writer adds that the Yellow Bird becomes so tame in Brazil, that its cage may be kept open without any danger of its returning to its native haunts ; but in this statement we can by no means agree, our own observations having led us to a contrary opinion ; such as we have seen in captivity have almost invariably proved themselves to be very untamable, falling upon and destroying the nest or young of other birds, and domineering over the larger species of Starlings and Thrushes with so much violence as to ensure to themselves undisputed possession of the food or sleeping perch, as none of their companions dared to approach until the wants of these tyrants of the aviary were satisfied : to the keepers alone they showed the more amiable side of their character, and were so shy before strangers as to refuse to sing if the listener was not concealed from view.

THE BALTIMORE GOLDEN STARLING.

The BALTIMORE GOLDEN STARLING (*Hyphantes Baltimore*), a North American species, is the member of this group with which we are most familiar. In the general construction of its body it closely resembles the Yellow Bird last described, but the ridge of the beak is slightly curved; also the wings are longer and the tail shorter than in that species. The plumage of the male is black upon the head, throat, and upper wing-covers, as are the quills and middle tail-feathers; the under parts of the body and small wing-covers are bright orange, the back and breast a light scarlet: the exterior tail-feathers are black from the root, but their lower half is bright orange. The large upper wing-covers are tipped with white, and the quills bordered with a white margin; the eye is orange, the beak and feet light grey. In the young male all the colours are paler: the iris is light brown, and the upper mandible brownish black. The size of this species is about seven and three-quarter inches long, its breadth twelve inches.

According to Audubon, the Baltimore Bird is met with throughout the whole of North America as far as fifty-five degrees north latitude, being very numerous in some parts, but only visiting others in the course of its migrations. Its favourite haunts are in hilly districts, to which it resorts as soon as spring appears, to discharge the duties attendant on incubation. The nest is suspended from a slender twig, and is most artistically woven, but its construction varies with the climate. In the Southern States the birds prefer the northern side of the tree, and form their little cradle of moss so loosely intertwined as to allow the air to penetrate; while those that inhabit the Northern States prefer such branches as are most exposed to the rays of the sun, and render their home warm and snug by lining it with soft and fine materials. The construction of these remarkable nests is very peculiar; the builders begin by seeking for all kinds of threads or fibres about the surrounding fields and villages, and frequently do very serious damage by their depredations among the skeins of thread or cotton laid out in the fields to bleach: all the odds and ends of cotton, silk, or thread thus collected are woven into the nest, amongst other materials, with a compactness and dexterity that is truly surprising. The female lays from four to six eggs, of a pale green colour, marked with dark spots or streaks. The young are hatched within a fortnight, and are fully fledged in about three weeks after their birth, from which period they begin to climb in and out of the nest, and hang from the outside after the manner of Woodpeckers; they then accompany their parents, by whom they are fed and tended for another fortnight, before they are capable of supporting themselves. In the more southern parts of North America these birds frequently produce two broods within the year; during the spring they subsist principally upon various insects, usually caught upon the wing; but in summer they prefer fruit of different kinds, and do great damage to the orange and banana trees. This species commences its migrations early in the autumn, flying generally alone, and high in the air, uttering loud cries and hurrying along with great rapidity; when evening approaches it seeks food and shelter upon a tree, where it passes the night; it then takes a hasty meal and resumes its onward journey. The movements of the Baltimore Bird are regular and graceful; its flight is direct and continuous; its step, when upon the ground, easy; and its adroitness in climbing amongst the branches such as to bear comparison with the activity of the Titmouse. The song is simple, but pleasing.

We select the CASSICANS (*Cassini*) as taking rank next in order to the *Icteri*, being, like them, of slender shape, with long, pointed, conical beaks, long, tapering wings, long and graduated tails, rounded at the extremity, and formed of broad feathers. The feet are strong, the toes large and armed with sharp claws. The plumage is thick, smooth, and glossy, principally black, heightened to greater richness by an intermixture of yellow. In size they resemble our Jackdaw. (See Coloured Plate VI.)



Plate 6. Cassin's Woodpecker.

WAGLER'S CASSIN'S _____ Cassin's Woodpecker

(Three-fourths life size)

The Cassicans hold pretty much the same place in America as that occupied by the Crows in European countries. In their habits they are lively and active, beautiful in appearance, and, though essentially occupants of trees, resemble the Yellow Birds in many particulars, like them frequenting fields of ripe corn, and doing considerable damage, without any apparent fear of the wrath of the proprietors. When in the woods, insects and seeds constitute their principal fare, and they will occasionally devour fruit. The voice of this species is not so pleasing as that of the Soffre, but it possesses very great flexibility—indeed, Schomburghk tells us that it can not only imitate the note of every other songster, but the cry of any animal, producing at times such a strange medley of sounds as to astound its hearers, who scarcely believe it possible that a single bird can alternately bleat like a sheep, crow like a cock, or scream like a turkey, all these various noises being accompanied by such extraordinary contortions of the whole body as cannot fail to excite laughter in those who witness this strange performance.

Scarcely less remarkable is the manner in which the Cassicans construct their nests. Like the Weaver Bird, they build regular settlements, suspending their artistically woven cradles in large numbers from the same tree, and very frequently in the immediate vicinity of other species. As with the Weaver Bird, these nests are inhabited from year to year, and repaired every season for the reception of a new family. In shape they are not unlike the large bags formerly used to carry shot, and are so lightly constructed that their walls may be seen through. Great patience and skill are exhibited in the manufacture of these abodes, some species only employing such materials as linen thread, or fibres, while others build with fine blades of grass, which they moisten with saliva in order to render them more pliable. Schomburghk tells us that this species is extraordinarily deficient in social attachment, and mentions an instance of this fact witnessed by himself. A large party of "Blackbirds" (Cassicans) had made their settlement upon the banks of a river which one day rose to an unusual height, and threatened destruction to the entire colony. Some of the nests were washed down, and others gradually filled with water. The terrified parents, unable to render any help to their young, flew about in an agonised confusion, or sought for their eggs and nestlings amongst the general débris, whilst such of the flock as were still above immediate danger sat quietly brooding, or continued their building operations without paying the slightest attention to the piteous cries of their companions. According to Audubon, these birds breed but once in the year, the nests being placed, as we have described, quite close together, thus ensuring a safety from the attacks of their numerous enemies, that could not otherwise be obtained; each family, however, leads a life quite distinct from that of its neighbours, and exhibits neither interest nor sympathy in the movements of those that live around it.

THE JAPU.

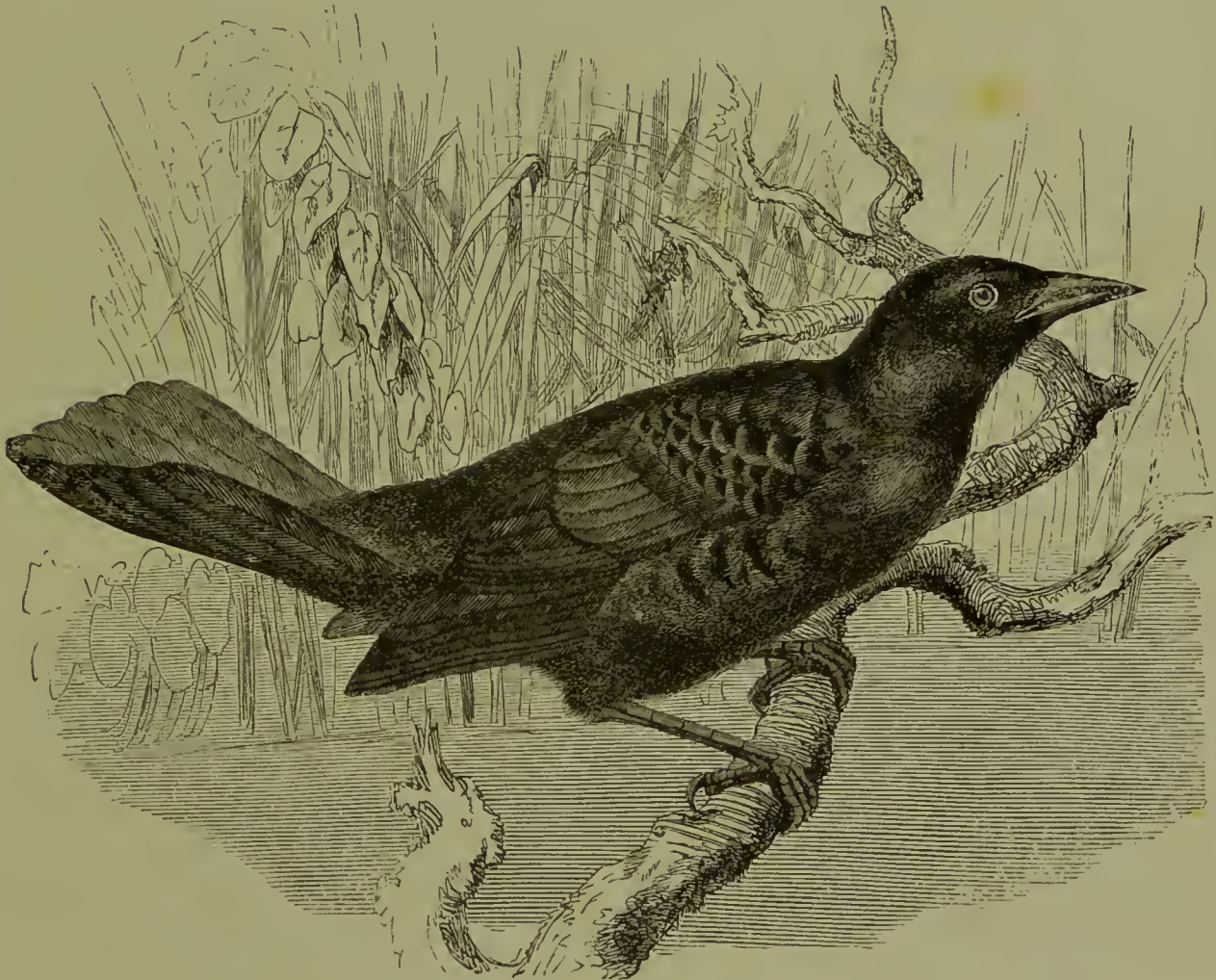
The JAPU, or TUFTED CASSICAN (*Cassicus cristatus*), is an inhabitant of South America, and has been selected for particular description as being one of the most remarkable species belonging to this group. In this bird the plumage is principally of a brilliant black, with the lower portion of the body of a deep reddish brown; the exterior tail-feathers are yellow, and the inner ones black. The beak is of a whitish yellow, the feet deep black, the eyes, like those of the rest of its congeners, light blue. The length of the male varies from fifteen and a half to seventeen inches, its breadth is twenty-three and a half inches, the wing measures from seven and two-third to eight inches, and the tail from six to seven inches. The female is at least three inches shorter, and the wings six or seven inches less in their span.

We are indebted to the Prince von Wied for an exhaustive account of this species, from which we shall extract such particulars as our space will permit. This remarkable bird, he tells us, inhabits the whole of South America, but is most numerous in the northern portions, frequenting woodland



THE BALTIMORE BIRD.

districts, and such plantations or human habitations as may be in the immediate neighbourhood of forests, but avoiding barren or open parts of the country. It is social and active, flying about incessantly amongst the trees, and hanging suspended by its sharp claws from the branches, from time to time plucking a favourite fruit, and carrying it off with cries of delight to another spot where it may be eaten in safety. During the season, oranges and bananas constitute its favourite food, and large quantities of valuable fruit are thus destroyed, in spite of all the precautions taken by the planters for its preservation; but at other times the Japu contents itself with less dainty fare, and subsists principally upon insects and berries. Few scenes are more animated than that afforded by a settlement of these interesting birds, as they perch upon the branches of the forest trees, in parties of some



THE GREAT BOAT-TAIL (*Quiscalus major*).

thirty or forty couples, or fly about filling the whole air with their strange and varied song, the general effect of which, when thus heard in chorus, is far from displeasing, though some notes are harsh, and others very shrill.

Their nests, which are extremely curious, are suspended close together from the branches of the highest trees; in shape they are not unlike a purse, being long, narrow, and rounded at the bottom, usually three or four feet long, and not more than five or six inches wide. A bough of about the thickness of a man's finger is usually chosen for their support, and to this they are stoutly fastened, a long and narrow hole being left at the top for an entrance. Occasionally these abodes are built one upon another, each being provided with a separate opening. The Japu constructs this large and beautiful fabric with the greatest care, weaving together the various fibres of which it is formed so

strongly, and with so much skill, as to render the task of tearing it to pieces a work of real difficulty. When the nest is completed a soft, warm bed of moss or leaves is made at the bottom of the bag, and upon this the eggs, one or two in number, are laid. We ourselves have never found more than one young bird in the nest, but believe we are correct in stating that two eggs are sometimes deposited: they are slightly elongated in shape, the shell being white, with reddish-violet or deep purple streaks and spots. The nestlings have loud, harsh voices, and resemble their parents in plumage very shortly after being fledged, as the yellow tail is soon acquired. Immediately after the breeding season young and old congregate in flocks, and seek for food upon their favourite fruit-trees. A more strange or beautiful sight can scarcely be imagined, says the Prince von Wied, than that of a tree laden with dozens of the curious nests, and animated by the presence of a party of Cassicans, whose glorious plumage seems to gain new beauty as they spread their tails, raise their wings, after the manner of the swan, inflate their breasts, and utter their flute-like cry, as though to attract the observation of a stranger, whose near approach they will permit without exhibiting any sign of fear. The flight of this bird is swift and light, the peculiar motion of its wings producing a whirring sound, which is distinctly audible. The natives of South America shoot the Japu for the sake of its flesh, although somewhat tough and coarse, and for its feathers, which they apply to many purposes of ornamentation, frequently forming them into a plume to wear upon the forehead.

The BOAT-TAILS (*Quiscalus*), so called on account of the peculiar conformation of the caudal part of their plumage, are distinguished by their long, straight, conical beaks, the upper mandible of which is slightly curved and bent at its extremity. The wings are of moderate size, the tail much rounded, and the webs of its outer feathers turned upwards, something like the sides of a boat. The legs are delicately formed, and their coat, which is black, gleams in certain lights with metallic brilliancy.

THE GREAT BOAT-TAIL.

The GREAT BOAT-TAIL (*Quiscalus major*) is sixteen inches long, and twenty-four broad. Its entire plumage is black, but the head and neck are shaded with rich purple, and the wings and tail-feathers have a bright green shimmer. The female bird is considerably smaller than the male, rarely exceeding thirteen inches in length and eighteen in breadth; her colour is a dull, deep, greyish brown upon the upper part of the body, and reddish brown underneath. In both sexes the eye is pale yellow, and the beak and feet black.

This species inhabits the Southern States of North America, and is very numerous in marshy districts, or upon the banks of rivers; it likewise frequents the salt marshes, and may be seen on the sea coasts in large flocks during the entire year, searching in the mud for crabs and worms, upon which it principally subsists. It does not appear to feed upon insects, but is very destructive to fruit gardens, and fields of corn or rice. By the month of February the male has acquired his full beauty, and at once seeks a mate, retiring with her into the woods, where he exhibits his new plumage in every point of view, apparently to excite her admiration, its extreme brilliancy causing it to be seen glistening and shining even at some distance, as the bird expands its feathers in the full blaze of the sun. During the time employed in the selection of a companion all the quarrelsome feelings of which rivals are capable seem to be aroused, but that important business once settled, the flock subside into their usual peaceful state, and set about the construction of their nests in perfect harmony, usually preferring some marshy locality. The eggs are four or five in number, of a greyish white colour, variegated with brown and black spots. Both parents assist in rearing the young, who are supplied with all kinds of food, the nests of other species being frequently robbed in order to provide for the wants of the nestlings. The Boat-tails, in their turn, suffer considerably from the attacks of their

many enemies, of whom the alligator may be considered as one of the most formidable, for being well aware what dainty morsels these fat and tender birds afford, it is ever on the watch to shake them from their nest among the reeds into the water, or by gliding quietly along in the direction from which it hears the young ones cry, secures at least a part of the brood, before the mother can warn her family of their danger. Like its congeners, the Boat-tail is extremely active; it climbs among the reeds with great rapidity, combining the boldness of the Crow with the agility of the Starling; its flight is undulating, and its song not unpleasing, though without great pretensions to melody. During autumn and winter it associates with many other birds, amongst which Herons are frequently met with.

The STARLINGS PROPER (*Sturni*) are birds of moderate size, compactly built, with short tails, long wings, rather long and broadly conical straight beaks, and high, strong feet; their plumage is rich, but harsh and very varied in its colouring. Like the rest of the family, they are of social habits, living together in flocks throughout the whole year, and carrying on all the business of life in common. Despite their somewhat clumsy appearance, they are extremely active, both upon the ground and in the air; their step is quick, but rather waddling; their flight light and noisy; and their movements in the trees extremely agile. All the members of the group are lively, restless, busy creatures, which may literally be said never to rest, except during the time they pass in sleep. Their food consists of insects, worms, and snails; occasionally they will eat fruit or the delicate parts of some plants, but never in such quantities as to be troublesome. The nest, which is large and irregular in its construction, is generally placed in holes of trees, rocks, or walls; the eggs are usually from four to seven in number. Few birds are more eminently adapted for domestication, their many talents rendering Starlings universal favourites when caged.

THE COMMON STARLING.

The COMMON STARLING (*Sturnus vulgaris*) combines all the many peculiarities of its family, and we have therefore selected it as the most suitable representative of their principal characteristics. The plumage of this bird varies considerably with age or the season of the year; in the spring the adult male is black, shaded with purple and green, these tints seeming lighter upon the wings and tail on account of the broad grey border by which the feathers are surrounded; some of those upon the back have greyish-yellow spots at their tips. The eyes are brown, the beak black, and the feet reddish brown. No sooner has the process of moulting been fully accomplished than the appearance of the bird is entirely changed, for all the feathers upon the nape, back, and breast are then tipped with white, and thus give the plumage the effect of being spotted; the beak also becomes considerably darker. The female resembles the male, but her plumage is even more spotted than that of her mate during the spring months of the year. The young are of a dark brownish grey, the region of the face being lighter than the rest of the body; the beak is greyish black, and the feet brownish grey. The length of this species is from eight and a half to eight and three-quarter inches, its breadth fourteen to fifteen inches; the wing measures rather more than four, and the tail from two and a half to two and three-quarter inches.

The COMMON STARLING is met with throughout almost the whole of Europe, principally frequenting its more southern portions, and preferring such wooded pastures or plains as are well watered or marshy. During its migrations it very frequently visits Northern Africa, and is an annual winter guest in Egypt and Algiers, but for the most part the flocks do not leave the Continent of Europe, and pass the colder part of the year in flying about the country in company with Ravens, Thrushes, and other similar birds. Few of the feathered tribe are endowed with so joyous and contented a disposi-

tion as is the Starling, whose cheerful voice may be heard amidst the utmost inclemencies of the weather, as it perches fully exposed to all the attacks of wind or rain, and appears philosophically indifferent to the scantiness of its supply of food. No sooner has spring commenced than the males may be seen about towns or villages, perching upon the steeples or high trees and pouring out their song, which is accompanied by a variety of animated gesticulations. We are, however, perhaps, giving



THE COMMON STARLING (*Sturnus vulgaris*).

our readers a wrong impression by speaking of the sounds uttered by the Starling as being a *song*, for it is, in fact, little more than a succession of harsh, loud, distinct sounds, uttered by the energetic vocalist with so much gaiety and expression as to render the performance quite attractive, especially when combined, as it occasionally is, with imitations of the songs of many other birds. Even such noises as the creaking of a door, the clattering of a windmill, or the crowing of a cock may often be clearly distinguished amongst its attempts at mimicry; the little singer will frequently continue its vocal exercise

for many hours at a time, only pausing occasionally in order to go in search of food. The breeding season commences early in spring, when Starlings build their nests, usually in the hollows of trees, or, should these not be attainable, in holes of walls or old buildings, and many are the disputes and combats that take place among the members of a flock before all are suited with a home. The nest itself is formed of stalks of grass, thickly lined with a bed of soft feathers, collected from the neighbouring farmyards; but, should such warm materials not be procurable, the architect is equally contented to employ hay, straw, or even small twigs. The brood consists of five or six long, large eggs, having a somewhat rough but glossy shell, of a light blue colour; upon these the female alone sits, but both parents assist in obtaining the constant supply of food required by the nestlings, though the father of the family manages now and then to steal away from his duties and pass an hour in singing with a party of pleasure-seeking companions. No sooner have the young left the nest than the vocal performances to which we have alluded may be heard throughout the entire day, for they do not require attention from their parents except during the first week; after leaving their home they immediately associate themselves with others of their kindred, and fly about in companies that are often very numerous, being in time strengthened by the addition of the second families, to the rearing of which the parents almost immediately turn their attention. When the duties of incubation are terminated, the old birds at once leave their nests, and congregate in immense flocks, which pass the night either amongst the trees or in beds of reeds or osiers. These swarms, occasionally containing hundreds or rather thousands of Starlings, fly about in dense masses during the day, and retire at night to the same roosting-place, their numbers frequently occasioning the reeds upon which they settle to break beneath their great weight, thus obliging them to seek shelter elsewhere, a proceeding always accompanied by an amount of squabbling and screaming that is absolutely deafening. Before leaving the country, the parent birds revisit their nests, upon which they perch and sing every morning and evening. They only commence their migrations when compelled to seek shelter from the snow and frost, and lead as blithe and active a life in the countries to which they resort as they do in their summer haunts.

Few species are so deserving of the protection of man as these most useful birds, an account of whose services in clearing the ground from snails and other hurtful creatures would sound almost incredible, were we to compute the hosts of active destroyers from whose attacks our fields and gardens are thus preserved. With characteristic patience, a German naturalist has been at the trouble of ascertaining that a single young Starling will consume 140 snails in fourteen hours out of the twenty-four, during which the young nestlings are constantly fed, only about three minutes intervening between the arrivals of the parents with fresh supplies for the hungry beaks of the little family. We cannot follow the writer through all his intricate calculations concerning a large swarm of Starlings that visited the part of Thuringia in which he lived, and must content ourselves by giving our readers the extraordinary result—namely, that the 180,000 birds of which this unusually large flock was composed could not have cleared the ground of less than 12,600,000 snails and worms *daily* during the time they remained in that neighbourhood. The proceedings of the Starling when in search of food are extremely amusing, as it runs hither and thither, prying into every conceivable nook with keen eyes and ready beak, so as to render it impossible for its victims to escape detection; even when search by sight is impracticable, the tongue is employed to feel amongst the grass, and accomplishes its duty with most unerring precision. When exposed to the attacks of their foes, the cunning of these birds is of the utmost service in securing their safety. It will frequently happen that when flying about in company with Crows and Jackdaws, the enjoyment of the party is interrupted by the sudden appearance of a Falcon or Sparrow-hawk; no sooner does the enemy approach than the vigilant Starlings at once take the alarm and beat a hasty and quiet retreat, leaving the bird of prey to seek a victim among their less intelligent or observant companions. From man they have

little to fear, for by him their numerous services are too fully appreciated to allow of any great number being doomed to a life of confinement. Still, when caged their qualifications are such as to render them general favourites. When kept alone they are readily tamed, but, on the contrary, should they be placed with other birds, they soon become quarrelsome: and, not content with constantly squabbling with their companions, have often been known to tear the nests of the latter to pieces, and throw out not merely the eggs but the young. In our own aviary we on one occasion found a very lively Starling flying about with a piece of white paper in its beak, and chasing the terrified occupants in all directions, this sportive performance apparently affording the greatest delight to the perpetrator of the joke, who seemed to enjoy the alarm and screams thus excited. Most extraordinary are the tales told of the facility with which this species can be taught to speak or imitate almost any sound; an instance is recorded of a Starling having learnt to repeat the Lord's Prayer quite distinctly, without missing a word; the naturalist Lenz, to whose curious calculations respecting these birds we have already alluded, kept one of them tame, and tells us that this creature not only whistled two tunes, and could utter syllables, but that it understood and obeyed his words and gestures like a dog.

The following narrative, for which we are indebted to the kindness of Dr. McFarlane McBirnie, will be read with interest:—"My father," writes Dr. Birnie, "from boyhood was passionately fond of birds, when under ten years of age he travelled from Balpon to Linlithgow and back, a distance of forty miles, in order to get a canary. A few years after, having broken his leg, he was confined to the recumbent position for two months, the tedium of which was relieved by the company of his favourites. In 1845 he bought a fledgling Starling for eighteen-pence, and at once commenced its education. He spent three hours a day (not, of course, consecutively) for twelve months before he brought it to perfection. From the very first, poor 'Richard,' as it was called, showed a love of learning, he seemed actually to drink it in; he would lie with his head inclined, as a person does when he wishes to listen intently, and would lean against the wires of his cage to be as near as possible to the sound; and I would here remark that in training a bird to sing and speak, the instruction should be imparted in a subdued, semi-whispering tone, in a darkened chamber, where there is nothing to distract the attention. My father made it a point to give Richard half an hour's tuition every night after ten o'clock, in total darkness, and he says he found it more tractable then than at any other time. It would take up too much space to show the *rationale* of this; I may state, however, that in early morning birds are intent on procuring food, and cannot be expected to listen to instruction, and then, during the day there are so many things going on in a house, so many diverse sounds, that it is impossible for them to single out the vocables we wish, whereas, after three hours' repose, when there is no desire for food, no wish for the pleasure of muscular motion, no sounds or sights to withdraw their attention, then is the fitting time to teach. By the time Richard was able to hop from perch to perch, his master saw that his pupil was striving to imitate him; never was scholar more apt or more gratified at receiving a prize than Richard was at getting a bit of hard-boiled egg on achieving two or three additional notes, and in this way he soon became the Mario of Starlings. At the word of command—as at the down-beat of a conductor's baton—Richard started off with the 'Hills of Glenorchy.' I regretted my father had not selected a more popular tune; yet I question if one could have been got more adapted for the vocalisation of a bird: prolonged notes, such as minims or dotted crotchets, a bird is not able to maintain; a tune with quavers, and in marching time, is best adapted to their sustaining powers. After having whistled the 'Hills of Glenorchy,' Richard paused, as it were to draw breath, and said, 'That's the "Hills of Glenorchy"—that's a tune for the ladies;' 'A wee gill o' the best, here—quick, quick, make haste;' 'Richard's a pretty, pretty bird;' 'A coach and six for pretty Richard;' 'Richard's the boy for kissing the lasses;' here he imitated the sound of kissing, familiar to every one, which convulsed his audience with laughter, especially if a number of

ladies were present ; then added, ‘ Now for the “ Hills of Glenorchy,” ’ and began *de novo*. I have heard many birds articulate, and am sure I shall be corroborated in the statement that, more particularly in the Parrot tribe, the words are often a mere screech—harsh and dissonant to a musical ear, and in many cases a stranger would require to be informed beforehand what the bird was going to say, ere he could properly understand it ; with Richard it was quite the reverse ; his whole performance was thoroughly musical, and so accurate was his vocalisation, that when at his best the tuning-fork showed that his notes had not fallen to any appreciable extent at the end of his song. Hundreds of times have I seen him roused from sleep at midnight, to gratify parties who had come from a distance to hear him ; my father would bend over the cage, and say in a petting sort of way, ‘ Come, now, Richard, give us the “ Hills of Glenorchy,” ’ when the poor bird would hop over to the wires, place his bill in my father’s mouth, get a kiss, and then go through the whole performance as often as he was asked. Richard had, besides his *chef-d’œuvre*, many stray sentences, which of themselves would have rendered him famous, such as calling the dog, ordering coals, &c. ; but these my father discouraged. Richard died at the patriarchal age of sixteen, deeply regretted by those who had, for so many years, looked upon and spoken to him as one of the family. While I write, he is looking down on me from his glass shrine.”

THE SARDINIAN STARLING.

The SARDINIAN STARLING (*Sturnus unicolor*) is a species inhabiting Southern Europe, and distinguished from the bird last described by the long and slender feathers upon its head and nape, and by the colour of its plumage, the latter being of pale slate colour, almost entirely without spot, and only enlivened by a very slight metallic lustre. The coat of the young bird is dark brown. This species inhabits Spain, Southern Italy, and a large portion of Asia ; it is common in Cashmere, Scinde, and the Punjaub ; its size is somewhat larger than that of our Common Starling, which it closely resembles in its habits.

THE ROSE STARLING.

The ROSE STARLING, or SHEPHERD-BIRD (*Pastor roseus*), is another European species, nearly related to those last described, but having the beak somewhat more compressed at its sides, and the upper mandible slightly curved ; the wings are also larger, and the tarsi higher than in the common Starling. In the old male the feathers upon the head become elongated, and thus form a kind of tuft. The Rose Starling is from eight and a quarter to eight and three-quarter inches long, and from sixteen to eighteen and a half broad ; the wings measure three inches and a quarter. The plumage of the old male is a rich black upon the head, throat, and upper breast, these parts being enlivened by a beautiful purple gloss, also visible upon the wings and tail, which are brownish black ; the rest of the body is of a delicate rose colour. The plumage of the female is paler in its tints and her tuft smaller than that of her mate. The young wear the same garb as other young Starlings.

South-Eastern Europe and a great part of Central Asia afford a home to this beautiful species, which only occasionally visits other portions of our Continent, but migrates regularly to countries still further south. In its mode of life it very much resembles the Common Starling, with which it frequently associates, the various flocks at times sleeping in company upon beds of reeds, though the Rose Starling usually prefers to seek the shelter of the woods during the night. The movements of these birds when upon the ground are easier than those of their congeners ; but their voice is strange and unpleasing—indeed, the song of a party of them has been well described as resembling the noises made by a number of rats when the latter are fighting and disputing amongst themselves ; moreover, so peculiar is their manner of singing when any number are together, that a listener would imagine them to be engaged in shrill and noisy altercation. In some parts of the country they are known as the

Grasshopper Starlings, on account of the large numbers of those insects destroyed by their agency ; their appearance is consequently often regarded as an unfailing sign that the much-dreaded swarms of locusts are about to infest the land ; others do great service by clearing the backs of cattle from many tormenting parasites. In India, however, the Rose Starlings are by no means regarded with favour, as the damage they do to the fields of rice is frequently extremely serious, and when this means of support is no longer obtainable, other kinds of seeds and grain are resorted to and destroyed in large quantities. Both the nest and eggs resemble those of other Starlings. The disposition of the Shepherd-bird is gentle and pleasing, but it is entirely without the amusing qualities by which the members of this family are usually characterised.



THE ROSE STARLING (*Pastor roseus*).

The MINA BIRDS (*Acridotheres*) form a distinct group of Starlings, inhabiting the continent of India. In these birds the beak is short, strong, and slightly curved at its roof ; the feet are powerful, the toes long, the tail rounded at its extremity, and the head ornamented with a crest.

THE MINA BIRD.

The MINA BIRD (*Acridotheres tristis*) is about ten inches long, three and a half of which belong to the tail ; the wing measures five inches and a quarter. The feathers upon the head, nape, and breast are of a brilliant black ; the rest of the coat is reddish brown, the wings and back being of a deeper shade, and the under side lighter than the rest of the body ; the exterior quills are black, but white at the root, thus giving a somewhat spotted appearance to the wing ; the tail is black, and tipped with patches of white, the latter becoming gradually wider towards the sides ; the belly and lower wing-covers are also white.

The Minas are among the commonest birds in India, Assam, and Burmah, where they frequent

the neighbourhood of towns and villages in preference to more wooded districts. A tree is usually selected as their sleeping-place, and from this point they fly over the country in small parties in search of food, stealing occasionally even into the huts of the natives, in order to obtain cooked rice, of which they are very fond; some follow the flocks and herds, and seize the grasshoppers as they rise from the grass when disturbed by the cattle, others seek subsistence by plundering the gardens and orchards in their vicinity. When upon the ground the Mina walks with ease, constantly bowing its head as it goes, and occasionally springing to a considerable distance; its flight is heavy, direct, and tolerably rapid, and its notes rich and varied. So little fear is exhibited by these birds that they build almost exclusively in the vicinity of houses, or even in temporary cages that are



THE MUSICAL GRAKLE (*Gracula musica*).

hung out for their accommodation. In Mosuri, where this species is only a summer visitor, it usually prefers making its nest within a hollow tree. Like the Starling, it easily acquires the art of speaking, and of imitating a variety of sounds. The Mina has been dedicated by the Indians to their god RAM, and is usually represented as perched upon his hand. Major Norgate has given a full description of this interesting bird, from which our space will only allow us to extract the following account of its quarrelsome propensities—regular pitched battles, he tells us, are of constant occurrence amongst these pugnacious little creatures; the two combatants, who usually belong to different flocks, coming to the ground, in order the better to carry on their struggle, which is maintained by clawing, beating with the wings, and rolling round each other, screaming loudly as the combat waxes hot; only for a very brief space, however, is the fight confined to these two champions of the rival parties; one after another the rest come down and mingle in the fray, which often rages so fiercely that broken

wings or other injuries at last compel the untiring combatants to cease their strife. The same writer describes the Mina's manner of singing as being very amusing : it inflates its chest as though about to make a most tremendous effort, and then gives voice to such a variety of crowing, grunting, and squeaking sounds as cannot fail to astonish its hearer. When in flight the notes of these birds are by no means unpleasing ; but if alarmed their cry rises to a loud, hoarse shriek, the rest of the party usually joining chorus until the uproar becomes general. The nest is constructed with the utmost carelessness, and is, in fact, a mere heap of straw, twigs, rags, or even shreds of paper ; but in spite of the discomfort of the home thus provided for the young, the latter are tended by both parents with great affection.

The GRAKLES (*Graculæ*) constitute a race of Starlings that have always been regarded with great favour by mankind. These birds are of a moderate size, with thick bodies, and short wings and tails ; the beak, which equals the head in length, is thick, high, and in its transverse section of a square form, the upper mandible is rounded and much vaulted at its roof. The fourth quill of the wings is longer than the rest, and the tail, which is rounded at its tip, is composed of twelve feathers ; the feet are strong, and the head is furnished on each side with two moveable appendages resembling flaps of skin (which are usually brightly coloured) hanging down from behind the eyes. The plumage is soft, and of a satin-like brilliancy.

THE MUSICAL GRAKLE.

The MUSICAL GRAKLE (*Gracula musica*, or *Gracula religiosa*) is about ten inches long and eighteen and a half inches in breadth ; the tail measures nearly three inches, and the wing five inches and three-fifths. The plumage of this species is of a uniform rich, deep, purplish black, shaded with green upon the lower part of the back and upper wing-covers ; upon the under surface of the body this beautiful green shimmer is less distinctly visible ; the wings and tail are jet black, the former edged with a white band, formed by a series of patches, with which the first seven primary quills are marked ; the strange fleshy flaps to which we have alluded are of a bright yellow colour, and are appended behind the eyes, passing over the ears, at which part they become considerably dilated. A naked space under the eyes is also of a brilliant yellow. The beak is orange, the feet yellow, and the eyes dark brown.

Jerdon tells us that these birds principally inhabit the woods of Eastern India, and that they are found in considerable numbers in the Rhat Mountains and other elevated regions, living at an altitude of 3,000 feet above the level of the sea, and only making their appearance in large flocks during the winter ; at other seasons of the year they are usually met with in parties of six or seven. These assemblages pass the night together, generally in beds of reeds or bamboo thickets upon the banks of the mountain streamlets. Their food consists of various kinds of fruit and berries, and their visits are therefore greatly dreaded by the proprietors of fields and gardens. The Grakle is lively and active, much resembling the Common Starling in disposition : its song is cheerful and varied, but contains many unpleasing notes ; its powers of imitation are so highly developed as to render it a most interesting companion when tamed ; indeed, some of the admirers of this gifted bird declare it to be superior to the Parrot in the art of mimicry, and at the same time entirely without the disagreeable noisy habits that often render the latter intolerable. When caged, the Grakle not only becomes much attached to those who feed it, but soon familiarises itself with all the dogs and cats of the establishment, and will even fly fearlessly about the house in search of food. Our own experience does not allow us to speak in quite such unqualified terms of praise as the writer from whom we quote : we have seen an instance in which one of these birds was so voracious as scarcely to allow itself time to utter a

sound, and so pugnacious and quarrelsome as to be an object of dread to all its feathered companions, who suffered severely from its beak and claws. This species breeds in holes of trees, but its eggs have not as yet been identified.

The OX-BITERS (*Buphaga*) are very remarkable birds, differing from other Starlings in the construction of their beak and feet, but resembling them in their mode of life and general habits. Their bodies are slender and their wings long; the tail, which is composed of twelve feathers, is of moderate size; the feet are provided with short toes, armed with strong hooked claws; the very peculiar beak is round at its base, and towards its tip compressed at the sides; the upper mandible is vaulted, and the lower portion bent forward at an obtuse angle; the plumage is lax, and of a brownish-grey colour. We are only acquainted with two species: they inhabit Central and Southern Africa, and bear a strong family likeness to each other both in their appearance and demeanour.

THE AFRICAN OX-BITER.

The AFRICAN OX-BITER (*Buphaga Africanus*) is about nine inches long and thirteen and three-quarters broad, the tail measures three and a half inches. The whole of the upper part of the body, including the throat and a portion of the breast, are of a uniform reddish brown, the belly and rump being of a light reddish yellow; the wings and tail are deep brown, the beak is of a reddish tint at its extremity and yellow towards its base; the feet are brownish grey, and the eyes bright reddish brown.

THE RED-BEAKED OX-BITER.

The RED-BEAKED OX-BITER (*Buphaga erythrorhyncha*) is about the same size as the species last described. Upon the back this bird is of a greyish brown, the lower parts of the body are pale yellow; the beak is light red, the feet greyish brown, and the eyes and eyelids of a golden colour. Both the species alluded to above are found spread over a large extent of country—the former inhabiting South Africa, whilst the home of the latter is confined to the central regions of that continent; occasionally both are found inhabiting the same district, but under no circumstances do the two species—though their mode of life has so much in common—ever join company. They are usually seen flying in little flocks of from six to eight, following herds of cattle, camels, elephants, or rhinoceroses about the country, the whole party frequently settling upon the backs of these animals in search of the flies or bots by which they are much infested. These birds are much disliked by the natives, owing to an idea very prevalent in Abyssinia, that the Ox-biter prevents the sores upon the cattle from healing; but this is far from being the case, as the beasts themselves seem to be fully aware, for they will stand with the greatest patience and allow the birds to extract the maggots from their skin or clear away the flies that have been attracted to any wounded part, never so much as attempting to frighten away their little friends, whose sharp probing beaks are rendering them efficient relief at the expense of a few moments of pain. Only such beasts as are unacquainted with the happy results attendant on this operation ever resent it, but these will occasionally testify excitement almost approaching to frenzy when they find themselves taken possession of by such unbidden guests. Ehrenberg tells us that the manner in which the Ox-biters carry on their work is most amusing, and describes their movements over the bodies of the huge beasts they favour as resembling those of the Woodpecker when climbing about the trunk and branches of a tree; no portion of the animal escapes scrutiny, and in prosecuting their search they will even hang head downwards from the ears or limbs, in order more perfectly to carry out their minute investigations. It is a strange sight to see the perfect confidence with which both quadrupeds and birds seem to regard each other, though the latter are so afraid of man that on the first sight of a stranger they scramble together upon the very top of the back of the ox or camel whose skin they are

examining, and, should the traveller attempt to approach nearer, seek safety in flight, rising into the air with wings full spread, and, after describing a large circle, descend to resume their labours;—should danger still impend, they take refuge upon some high stone or piece of rock; but they never frequent trees for this purpose. Gordon Cumming tells us that the cattle are often warned of the approach of some of their numerous enemies by the acute perceptions of these watchful servants; but neither he nor any other traveller has given us any information as to the manner in which the Ox-biters build their nests, or carry on the work of incubation.



THE RED-BEAKED OX-BITER (*Buphaga erythrorhyncha.*)

The tropical regions of Africa, and some part of Asia, are inhabited by a group of birds which seem to form a connecting link between the Starlings and the Birds of Paradise, and are distinguished by such splendour of colour and satin-like brilliancy of plumage, as to have obtained the name of

The GLOSSY STARLINGS (*Lamprotornithes*). All parts of the countries to which they belong are enlivened by the presence of these brilliant creatures, but they principally take up their residence in rocky districts, wooded valleys, or even in the immediate vicinity of man, though they prefer to disport themselves amidst the woods, to which they lend an embellishment that travellers are never weary of extolling. The various members of this group are without exception lively, bold, and noisy in their demeanour; they are usually met with in large flocks, and in many cases do not withdraw from the society of their companions, even during the breeding season; this sociable disposition is, however, by no means manifested towards other birds, with many of whom they live in a constant-state of active warfare. Fruit, seeds, snails, worms, and insects of various kinds constitute their principal food, but

they will occasionally eat carrion, and, like the Ox-biter, they often render good service to the cattle by clearing them from various parasites. Their movements are light and active, in all respects resembling those of other Starlings, and their disposition exceedingly sagacious and intelligent. Some species have very discordant voices, while others are not without some slight pretensions to song, inasmuch as their call-note is agreeable, and often composed of more than one syllable. Such trifling peculiarities as distinguish the various members of the group are most strikingly observable in the difference of their habits during the breeding season: some species separating from the rest of the flock while busied with the cares of a family; others, on the contrary, remaining with their companions even at that period of the year. The formation of their nests varies considerably, according to the situations



THE SUPERB GLOSSY STARLING (*Notauges superbus*).

in which they are placed—such as are built among the rocks being nothing better than a mere heap of twigs or grass, whilst those placed in the trees are necessarily substantial, and more artistic in their construction. The brood usually consists of five or six eggs, of a green colour, and marked with either red, brown, blueish, or black spots; some species breed twice within the year. It is at present doubtful whether any of these birds ever migrate; for the most part they seem to spend their time in wandering over a limited tract of country, appearing in certain parts only for a short time, and then as suddenly taking their departure. The Glossy Starlings are seldom caught by the natives of the regions they frequent, and are, therefore, very rarely seen in our part of the world, though their great beauty, and the ease with which they may be reared, eminently point them out as adapted for life in a cage.

We have divided this group into several divisions, the first of which contains

The TRUE GLOSSY STARLINGS (*Lamprocolii*). In their general conformation these birds resemble our Common Starling; the beak, which is of moderate size, slightly curves towards its tip, and the upper mandible reaches a little beyond the lower. The wings extend about half way down the rather short tail, which is straight at its extremity. The feet are short and powerful, the toes large, and the claws with which they are furnished of moderate proportions. All the members of this group are decked in the most gorgeous apparel, of which a metallic green is usually the predominating tint, and all have a more or less satin-like gloss upon their plumage.

THE BRONZE-COLOURED GLOSSY STARLING.

The BRONZE-COLOURED GLOSSY STARLING (*Lamprocolius chalybeus*), an inhabitant of North-Eastern Africa, possesses an attire of such extraordinary lustre, that words are almost inadequate to express the appearance it presents when glittering in the rays of a tropical sun. The plumage is bronze-like in tint, except upon the sides of the head, the lower part of the belly, and wings, these parts being blue, as are the tips of the feathers upon the shoulders; the dresses of the male and female are alike, but the young are of a metallic green upon the back, and underneath of a deep brownish grey, almost entirely devoid of brilliancy. This species is about ten and a quarter inches long and seventeen and a half in breadth; the wing measures five and a half, and the tail three and three-quarter inches. The Bronzed Glossy Starlings are to be met with in great numbers in their native land, more especially in the forests, which they seem to prefer to the less densely wooded districts; they also occasionally frequent the more open country, living for the most part in pairs, and only congregating in small flocks after the termination of the breeding season. They are brisk and lively, endowed with all a Starling's alacrity, both upon the ground and in the trees; their flight alone is peculiar, being distinguished by a noiselessness that plainly indicates the velvety softness of their wings. Little can be said as to their other endowments—their song is extremely insignificant, and their call-note a most unpleasing sound. To say the truth, if these birds were not so splendidly decorated they would have little to recommend them to our notice, nature seems to have been so lavish in this one particular as to have deemed any other charm unnecessary. Those who have seen the Bronze Starling in its native woods describe it as flashing upon their astonished sight like a bright and unexpected gleam of sunshine, its feathers during life reflecting every ray of light as does a looking-glass; but they lose this intense brilliancy very shortly after death. This beautiful creature has, we believe, as yet never been brought to Europe.

THE GOLDEN-BREASTED GLOSSY STARLING.

The GOLDEN-BREASTED GLOSSY STARLING (*Notauges chrysogaster*), another species belonging to this group, is an inhabitant of North-Eastern Africa, and is distinguishable from its congeners by the greater thickness and inferior gloss of its plumage, as well as by its slender beak, short tail, comparatively strong high tarsi, and long toes. This bird is not more than eight inches long and thirteen and a half broad; the wing measures four inches, and the tail two inches and a half. In the old male the brow and upper part of the head are of a greyish green, the mantle, neck, throat, and breast blackish green, intermingled with bright brown; the rump is brilliant steel blue, the belly and thighs rust red, but entirely devoid of lustre. The bridles are black, the eyes brown, the beak yellow, and the feet blueish black. The young are dark brownish green upon the back, and reddish brown below the region of the throat, which is rather deeper in shade than the breast.

THE SUPERB GLOSSY STARLING.

The SUPERB GLOSSY STARLING (*Notauges superbus*) may certainly be regarded as the most

magnificent member of the group. This species, which inhabits Abyssinia and the most unfrequented portions of the African continent, is of about the same size as that last mentioned; its plumage is a reddish copper colour upon the top of the head, and green upon the mantle, each feather being tipped with a brilliant silky black spot; the front of the throat, upper part of the breast, and tail are blue, with a steel-like gloss. The rest of the body is red, with the exception of a white band upon the breast.

These birds are met with in considerable numbers throughout the whole of Soudan; they may usually be seen flying about in large flocks, sometimes, but rarely, in pairs. Heuglin tells us that though they prefer to reside upon low-lying plains, they are occasionally met with at an altitude of 4,000 feet above the sea, but we ourselves have never seen them at so great an elevation. During the day multitudes of these gorgeous creatures may be observed disporting themselves with great vivacity, running in small parties over the ground in search of food, or seeking repose and shelter from the mid-day sun amongst the branches of the trees, on which they also perch morning and evening, whilst the males pour forth their matin or vesper song; should the party be alarmed, they do not seek safety in flight, but hide amongst the foliage until they can again venture from their concealment. During the whole time they are in search of food the neighbourhood is kept in a constant state of uproar: one screams to another almost without intermission, several frequently joining in with their voices, apparently for the sole purpose of rendering confusion worse confounded. As may be imagined, it is no difficult matter to trace a flock of these birds, but their capture by means of the gun is attended with much difficulty, as they are extremely shy, and resort to shelter at the first alarm of danger.

The members of the second division of this group are recognisable by their delicate, arched, and compressed beaks, short wings, tails of moderate length, weak long-toed feet, and scale-like plumage, from which they have derived their name of SCALY GLOSSY STARLINGS (*Pholidauges*). We are only acquainted with one species—

THE SCALY GLOSSY STARLING.

The SCALY GLOSSY STARLING (*Pholidauges leucogaster*) is met with over a large portion of Africa, and also occasionally found in Arabia. The plumage of this gaily-bedizened bird is of a rich violet over the whole of the back and throat as far as the breast, these parts being pervaded by a beautiful blue reflection or shimmer; the breast and belly are white, the wings blackish brown, bordered with violet, and relieved, as are all the darker portions of the body, by a copper-coloured metallic brilliancy; the iris is light brown, and the beak and feet black. The young differ widely in appearance from the adults, the upper portion of their bodies being striped with light and dark shades of brown, while the under parts are reddish white, streaked with brown. The male is about seven inches long, and twelve and a half broad; the wing measures four inches, and the tail two inches and three-quarters.

These birds are widely distributed throughout the countries where they reside, generally, however, preferring mountainous districts; they are eminently arboreal, and but rarely pass any length of time upon the ground. In their mode of life they resemble other Starlings, but are very quiet compared with the rest of their family. When in flight their plumage is extremely striking, for, instead of its usual violet hue, its back glitters in the sunlight with a bright *copper colour*, and it is only when it remains stationary that the blue shades become apparent, insomuch that those who are lucky enough to bring down one of them with the gun are astonished to find how they have been deceived as to the real colours. In its movements this brilliant bird is light and elegant, flying with great rapidity high in the air; when in search of a resting-place, it selects the tops of high trees, those in the immediate vicinity of water obtaining a decided preference. Heuglin tells us that he has seen

these birds living 2,000 feet above the sea, but gives us no information as to their nests, or habits during the breeding season.

The GLOSSY MAGPIES (*Lamprotornithes*) constitute a small group belonging to the family of the Starlings. They somewhat resemble the Jay in their form and habits, and are of larger size than the species we have been describing. They are, moreover, remarkable for the great development of their tails; the beak is small and delicate; the upper mandible is arched, and curves slightly outwards at its edges; the wings are long, and the tail so sharply graduated, that the exterior feathers are only a third of the length of those in its centre; the tarsi are high, the toes long, and armed with strong claws.



THE SCALY GLOSSY STARLING (*Pholidauges leucogaster*).

THE BRAZEN GLOSSY MAGPIE.

The BRAZEN GLOSSY MAGPIE (*Lamprotornis æenea*) is from eighteen to twenty inches long, ten or thirteen inches of this measurement belonging to the tail; the wing is from six and a half to seven and a half inches long. The predominating shade upon the plumage is a beautiful ever-changing blueish green; the back and lower parts of the body are brown, and the head enlivened by the copper-like brilliancy we have already alluded to as pervading this group. The feathers upon the wing-covers are spotted with black at their tips; the tail is purplish blue, marked with irregular dark spots, and gleams with metallic lustre. The eye is light yellow, and the back and feet black. These splendid birds inhabit Western and Southern Africa, and are replaced by a very similar race in the more northern portions of the continent. Le Vaillant, whom we have to thank for the discovery of this species, tells

us that the Brazen Glossy Magpies congregate in large flocks, and spend their lives principally amongst the trees, from which they descend from time to time to seek for food. When running upon the ground the long tail is borne aloft, after the manner of the Jay. In disposition these birds are extremely shy, and distrustful of man, though we have occasionally seen them near such of the native huts as are built upon the borders of the forest. Heuglin mentions having seen them living both in pairs and flocks, at an altitude of 4,000 feet above the level of the sea; we learn from the same author that they will occasionally eat carrion; their voice is harsh and screaming, and so peculiar in its sound as to be quite unmistakable. Their food consists of various kinds of insects, some of which they catch with great dexterity when on the wing.



THE SATIN BOWER BIRD (*Philonorhynchus holosericus*.)

The ROCK GLOSSY STARLINGS (*Moriones*) constitute the last group of this family to which we shall allude. These birds are recognisable by the inferior beauty of their plumage, which, however, is not without a certain brilliancy and gloss upon the feathers; in all the species the quills of the wings are almost or entirely brown.

THE WHITE-BEAKED ROCK GLOSSY STARLING.

The WHITE-BEAKED ROCK GLOSSY STARLING (*Philonorhynchus albirostris*) is found in Abyssinia, where it frequents the rocky parts of the country, or lives upon high bare trees or ancient ruins. Its plumage is silky; the short beak, which is rounded at its tip, is slightly notched, and partly covered

with hair-like feathers at the base of the upper mandible ; the wings are rounded and moderate in size, the third quill being longer than the rest ; the tail is rather long, and square at its extremity ; the feet are powerful, the toes long, and armed with strong hooked claws. The plumage of the old male is principally of a blueish black, that shines with a steel-coloured lustre ; the tail and large wing-covers are of a soft velvety black ; their quills brownish red, tipped with a blackish shade upon the outer web. The iris is reddish brown, the beak greyish brown, and the feet black. The female and young are blueish grey upon the head, throat, and breast. The length of this bird is about eleven inches, the wing measures six and a quarter, and the tail four inches and one-third. Rüppell, who first discovered this species of Rock Starling, tells us that it lives in flocks, and subsists upon various kinds of berries and seeds ; its movements are light and elegant, and its voice pleasing and rich in its tones. The capture of this bird is extremely difficult, as it is exceedingly shy, and ever on the alert against approaching danger, which it eludes by seeking shelter amongst the fastnesses of its favourite rocks.

The MOUNTAIN GLOSSY STARLINGS (*Amydrus*) are distinguished by their decidedly curved and delicate beaks, short rounded wings, long graduated tail, and silky plumage, which is entirely without the metallic brilliancy possessed by the birds above described ; they inhabit Southern and Central Africa, and are occasionally met with in Arabia. As an example of this group we select

THE NABURUP.

The NABURUP (*Amydrus Naburup*), is a bird about nine inches and two-thirds long ; the wing measures five and a quarter inches, and the tail four inches. The colour of the plumage is a dark steel blue, except upon the six first quills, these being reddish brown upon their outer web, light brown upon their inner portion, and blackish brown at their tips ; the iris is light red, the beak and feet pale black. The coat of the female resembles that of the male, but she is somewhat smaller. The young are brown, spotted with steel blue. In its habits this species is social and its song agreeable ; like its congeners, it builds amongst the rocks of Abyssinia, forming in some cases small settlements, and weaving its nest with so little skill as to permit the eye to penetrate its interior. Both sexes assist in the work of incubation, but beyond this we have no knowledge of their habits.

The ORIOLES (*Orioli*) constitute a family of beautiful birds, regarded by some ornithologists as allied to the Thrushes, and by others classed with the Birds of Paradise, but to which we venture to assign a position in this place. They are recognisable by their elongate slender bodies, long wings, and tails of moderate size ; the feet are short, the toes strong, and armed with powerful claws ; the beak is long and conical ; both mandibles are rather vaulted, and the upper one terminates in a slight hook. The plumage, which is soft and gay in its colours, varies considerably, according to the age or sex of the bird ; and, when destitute of the brilliant gloss by which it is usually distinguished, is still more varied in its hues. Several of the most interesting species of this family inhabit Australia, and none of its members are found beyond the limits of the eastern hemisphere. All may be regarded as tree-birds, though some few spend a considerable portion of their time upon the ground, over which they hop with an extremely heavy, awkward step ; amongst the branches, on the contrary, their movements are light and graceful, and their voice is both full and pleasing in its tones. Fruit and insects constitute their principal food. During the period of incubation many species separate entirely from their companions, towards whom they testify considerable animosity and jealousy ; but others remain in the company of their associates even at that season of the year. The nests of all are placed upon trees, and are remarkable for the neatness and beauty of their construction.

THE SATIN BOWER BIRD.

The SATIN BOWER BIRD (*Ptilonorhynchus holosericus*), a recently-discovered inhabitant of Australia, is a very celebrated member of this family. The body of this species is powerful, the wings rounded at the tip; the tail of moderate size, and cut straight at its extremity; the tarsi are high, slender, and the toes short. The beak is strongly formed, the upper mandible arched at the tip over the lower portion, which is also slightly bent. The adult male is truly a splendid creature, with rich satin-like plumage of a deep blue black; the primary quills and the secondaries are of velvety blackness, tipped with blue, as are also the wing and tail feathers; the iris light blue, surrounded by a narrow red ring; the beak is blueish grey, tipped with yellow, and the feet red. The female is green upon the upper parts of the body, and underneath of a yellowish green; the feathers are spotted here and there with brown crescent-shaped spots, that give a scale-like appearance to the lower portion of the bird; the wings and tail are deep yellowish brown. The young resemble the mother.

Gould has made us familiar with the curious habits of the Satin Birds, whose favourite haunts are found amidst the thickly-foliaged "bush" of Australia, and here they may be seen living in pairs throughout the greater part of the year, only quitting their favourite locality when tempted to short distances by the hope of obtaining some particular kind of food. In autumn they usually congregate in small flocks, and seek a home among the bushes that grow upon the banks of neighbouring rivers. Insects sometimes form a portion of their diet; they, however, prefer fruits and grain, and are fond of robbing the gigantic fig-trees of their tempting burden. When engaged in eating, these birds are so extremely shy and cautious as to render their capture almost impossible. One of the oldest members of the party is usually found perched upon the highest branch of some neighbouring tree for the purpose of warning his companions of approaching danger: this he does by a peculiar clear note, which—should the sentinel become excited—is followed by a harsh, guttural cry. Their *bowers* have been described by the author from whom we quote as most peculiar and beautiful in their construction. From observations made by himself, he tells us that these remarkable erections are generally placed upon the ground, under the shelter of an overhanging tree or bush, in some quiet and retired place, and vary considerably in their size. The walls are strongly formed of twigs and small branches woven together in such a manner as to bring the ends in contact at the top. An opening is left to form an entrance at both extremities of this strange arbour, which is decked with every gay or shining material that the little architects can procure; snail or mussel shells, pebbles, or white bones are laid as ornaments to grace the entrances, and Parrot-feathers or brightly-coloured rags are stuck between the twigs; indeed, so well do the natives know the passion of the Satin Bird for glittering or polished objects, that should they lose anything of that description, they at once endeavour to discover the bower that has been beautified at the expense of their property. Gould mentions having found a pretty pebble an inch and a half long lying within one of these edifices, which was also decked with a variety of blue woollen scraps that had, doubtless, been stolen from a settlement in the vicinity. Males and females alike resort to these bowers, solely, as it would appear, to disport themselves in very much the same manner as we do in a ball-room, dancing and turning about with the greatest spirit and liveliness, or chasing each other up and down their gay apartment in an untiring whirl of sportive delight. Should a female lose her mate, she at once consoles herself with another; and we have known an instance in which one of them was deprived of no less than three successive mates, without deterring her from participating in the gambols of the rest of the party. The males principally undertake the actual labours of constructing the gala chamber, whilst all the more delicate work of beautifying the interior devolves entirely upon the females; the nests are said to be built at no great distance from the bower; but the eggs, as far as we know, have never been found. A pair of Satin Birds were

presented to the Zoological Gardens in the Regent's Park some few years ago, and a bower, constructed by them, may be seen in excellent preservation in the British Museum.

The COLLAR BIRDS (*Chlamydera*) are nearly allied to the group last described, and are addicted to the same remarkable habit of bower-building. In these species the beak is compressed at its sides and notched towards its tip; the upper mandible is slightly vaulted; the wings are long and pointed, their third and fourth quills being of greater length than the rest; the tail is long and slightly rounded; the tarsi are covered in front with broad scales; the toes are large, and furnished with sharp-pointed claws.



THE SPOTTED COLLAR BIRD (*Chlamydera maculata*).

THE SPOTTED COLLAR BIRD.

The SPOTTED COLLAR BIRD (*Chlamydera maculata*) is about ten inches long; the feathers upon the top of the head and region of the throat are of a beautiful brown, surrounded by a narrow black line, those upon the head being tipped with silver grey; the neck is surrounded by an elegant collar or plume of long feathers, of the colour of a peach blossom; the entire back, wings, and tail are covered with deep brown feathers, marked at their extremities with a round, brownish-yellow spot; the lower parts of the body are greyish white, the feathers upon the sides streaked with a zig-zag, pale brown line; the eye is deep brown, the beak and feet of a lighter shade. The young are without the feathery collar round the neck.

These interesting birds are inhabitants of Central Australia, where they make their nests and spend the greater part of their lives upon the numerous low bushes with which the plains are covered,

hiding themselves in the thickest branches at the very tops of trees at the first approach of a stranger, and thus rendering the observation of their habits a work of considerable difficulty; those who are desirous of obtaining a specimen are therefore compelled to watch the tree on which they perch until thirst compels them to come down in search of water. Gould informs us that the bowers built by the Collar Birds are even more artistically constructed and elaborately decorated than those of the Satin Bird, and though erected in similar situations, are more arched and of greater size, some being as much as three feet long; like those we have described, the sides are formed of twigs woven together, but these birds are not content with so rough a screen, and cover their ball-room with a layer of fine and beautiful grass, large stones being employed by the clever little architects for the purpose of



THE PIROL, OR GOLDEN ORIOLE (*Oriolus galbula*).

keeping all the materials firmly in the proper place. The interior is decorated in the most elaborate manner with various kinds of shells, gay scraps, bleached bones, or even the skulls of small animals; some of them being placed in such a manner as to form a sort of approach to the bower, whilst a goodly number are heaped up by way of ornament upon each side of the entrance. Instances have been known in which these energetic and persevering little creatures have collected as much as half a bushel of materials, rejecting everything as unsuitable for their purpose that is not quite white or very gay in colour, and actually going to search for shells upon the banks of rivers some miles distant from the spot on which they build. Gould tells us that these tasteful bowers are so firmly constructed as to serve as a pleasure apartment for several seasons in succession.

The birds constituting the second group of this family are recognisable by their elongated beaks, short feet, and rather long wings; in the plumage of the male, black and yellow predominate; but the prevailing colour of the female is a greenish grey.

THE PIROL.

The PIROL, GOLDEN ORIOLE, or CHERRY BIRD (*Oriolus galbula*), is about nine and three-quarter inches long and eighteen broad; the wing measures about six inches, and the tail four inches. The female is a trifle smaller than her mate. The plumage of the male is principally of a splendid light yellow, only the bridles, wings, and tail being black; the roots of the quills and the tips of the tail-feathers are ornamented with a yellow spot. The colour of the female, as well as that of the one-year old male and young birds, is green above and white beneath; the front of the throat is of a light ash grey, marked with long greyish-black streaks; the tail is tipped with yellow, and the wing-feathers edged with a light border; the eyes are bright carmine, the beak a dull red, that of the female and young being greyish black, and their feet lead colour.

In Germany this beautiful species has received the name of the Whitsuntide Bird, from the fact that in most parts of Europe, except the extreme north, it usually makes its appearance at that season of the year. Central Asia, however, must be regarded as the actual habitat of the Pirol; there, as elsewhere, it frequents wooded districts, generally avoiding mountain tracts, and only tarrying for a short time amongst the forests of fir or pine trees passed over in journeying to another locality. Birch or oak trees afford it a favourite retreat, and upon these it will establish its head-quarters, only leaving them to fly about the gardens or orchards in the immediate neighbourhood in search of food, and thus becoming very troublesome to the inhabitants at the season when the cherries ripen. During the course of its migrations, the Pirol visits the very centre of Africa; we ourselves have seen it as far south as eleven degrees north latitude, and it is constantly met with in the western parts of the continent. In its habits this bird is distinguished by many peculiarities, although living in the immediate vicinity of man; it is extremely shy, and constantly endeavours to conceal itself from his view. In disposition it is always mild and restless, flying and fluttering about incessantly from one tree or branch to another, only coming down to perch upon a bush, or searching the ground when desirous of procuring insect food. Its gait is so extremely awkward, that it may be said to progress by means of a series of short clumsy jumps, rather than by hopping in the usual manner. Its flight is heavy, noisy, rapid, and, like that of the Starling, very undulating. Amongst themselves these birds are extremely quarrelsome, often pecking and hunting each other about for a quarter of an hour at a time upon the slightest provocation—indeed, they exhibit a most pugnacious disposition towards all their feathered companions. Their voice is very loud, full, and agreeable, and they would seem never to be weary of exhibiting their vocal powers; a pair of them is sufficient to enliven the whole wood in which they take up their abode.

The nest, which is most artistically constructed, is usually suspended from a forked and slender branch; in shape it is like a deep basin. The walls are formed of blades of grass, vine-tendrils, wool, cobwebs, and a great variety of similar materials, the interior being snugly lined with a thick bed of wool, feathers, or fine grass; this beautiful structure is most skilfully fastened in its place by means of long threads or twigs, moistened with saliva from the beak of the bird, and then wound several times round the branch, their ends being woven into the body of the nest. Both parents assist in the formation of the outer wall of this pretty fabric, but the female alone undertakes the preparation of the warm bed upon which the brood are to be deposited. The eggs, five in number, are laid about June; they are smooth, white, and marked with dark grey or reddish spots. Passler tells us that the affection of these birds for their young progeny is very great, and that they show considerable courage and determination in defending their little family if any attempt is made to touch their nest. At noon the female is relieved from her watch by her mate, who remains upon the nest whilst she flies away hurriedly to snatch a hasty meal from the neighbouring fields. The young are hatched within a

fortnight ; they grow with great rapidity, and moult their feathers before leaving the nest. Should a pair of Pirols be driven from their home whilst brooding, they will at once set about their preparation for another family, but will never recommence if disturbed a second time. Various kinds of insects, caterpillars, butterflies, or worms are consumed by these birds in great numbers, and they also eat cherries and other descriptions of fruit in abundance. Notwithstanding its usual timidity, the Pirol has been known to become so tame when caged as to feed from its keeper's hand or mouth ; and in one instance that came under our notice, would pull its master by the hair if he omitted to pay it the attention desired.

Africa and Southern Asia possess many species of Orioles ; these it is needless to enumerate, as they closely resemble those that inhabit Europe. We find, however, in Australia another group of these birds, which we must mention, inasmuch as they form a connecting link between the Pirols and the Birds of Paradise.

THE GOLDEN-CRESTED ORIOLE.

The ROYAL or GOLDEN-CRESTED ORIOLE (*Sericulus chrysocephalus*), one of the most beautiful creatures inhabiting that fertile and highly-favoured continent, is distinguished by its short and feeble bill, the upper mandible of which is very distinctly notched, its straightly cut, or very slightly rounded tail, and the peculiar nature of its feathers. The head, back of the neck, and an arched line which passes from the nape over the breast, are bright yellow, while the rest of the plumage is velvety black. The first quill is black, the rest of the primaries yellow in the middle and black at the root and tip ; the secondaries are yellow, if we except a narrow border to the outer web. The eye is pale yellow, the beak of a deeper shade, and the feet black. In the female the head and throat are brownish white, the top of the head being marked with a large black spot ; the upper portions of the wings and tail are olive brown, the feathers of the back tipped with triangular brownish-white spots ; the belly is olive brown, and marked with similar but still more distinct spots. The eyes are brown, and the feet black. The young resemble their mother. The full-sized birds are about eight inches and three-quarters in length.

We learn from Gould that this splendid species is confined to Eastern Australia, and is very numerous in the bush about Moreton Bay, as also upon the neighbouring islands. In its habits it resembles the Pirol, but is much quieter. It has no fear of man, and delights to perch in full view upon the highest and most conspicuous branches of the trees ; it would, however, seem as if the old males learnt by experience the danger to which they expose themselves by this lavish display of their gorgeous plumage, for they are much more prudent in this respect than the females and young males. As regards their mode of incubation Gould was unable to obtain any trustworthy intelligence.

BUT few years have passed away since Europeans first became acquainted with the living forms of the magnificent creatures we are now about to describe. Their glowing feathers, it is true, had long been familiar to every eye, but the natives of New Guinea, in preparing their skins for exportation, had removed all trace of legs, thus giving rise to most extravagant tales about the life they led in their native lands. The Birds of Paradise, as they were called on account of their apparent want of feet and great beauty, retained, it was popularly supposed, the forms they had borne in the Garden of Eden, and lived upon no more substantial nourishment than dew, or the ether through which it was imagined that they perpetually floated by the aid of their long, cloud-like plumage, only seeking an



BIRDS OF PARADISE.

occasional change of position in suspending themselves for a few minutes from the branches of a tree by some of the tendril-like feathers of their tail. In vain naturalists endeavoured to prove the absurdity of these and many other fables; the public mind would not be convinced, and for centuries retained and cherished these most poetical notions. Since those days many travellers in New Guinea and its islands have seen and described the Birds of Paradise, and we are indebted to Bennett, Wallace, and Rosenberg for many very interesting but by no means exhaustive particulars as to their habits and mode of life.

THE BIRDS OF PARADISE.

THE BIRDS OF PARADISE (*Paradisææ*) are magnificent Ravens, varying in their size from that of a Jay to that of a Lark, and are distinguished not only by the exquisite beauty of their feathers,



THE RED BIRD OF PARADISE (*Paradisæa rubra*).

but by the elegance of their shape. In this family the beak is of moderate size, straight, or slightly curved, compressed at its sides, and covered at the base with a feathered skin, by which the nostrils are concealed; the wings are of moderate length, and very decidedly rounded, as the sixth and seventh quills are much longer than the rest; the tail is either composed of twelve rather long feathers, combined with many thread-like feathery appendages of great length, or is extremely long, simple in form, and sharply graduated; the feet are powerful, the toes long, and armed with sharp, crooked claws. In some species the plumage upon the sides is most peculiar in its appearance, the feathers growing to a great length, and splitting, as it were, into several light and delicate portions. These peculiarities are only observable in the male, both the female and young being much more simply clad. The Birds of Paradise are found exclusively in New Guinea and the neighbouring islands,

Arnisland, Salawati, Meisol, and Waigiou, each of these localities possessing one or more distinct species.

Rosenberg has given us the following description of the manner in which the natives prepare these valuable creatures for the European and other markets:—The Papuans shoot the Bird of Paradise with arrows, and then strip the body of its skin, cut away the feet and a portion of the tail-feathers; they then insert a stick through the beak, and thus supported, the skin is hung to dry in the smoke of a wood fire in order to preserve it from the attacks of vermin. The natives of Meisol, on the contrary, do not remove the feet or any portion of the tail, as they have learnt by experience that the unmutilated skins command the highest price. These skins are bought by merchants from Madagascar, Teimate, and Eastern Seram, and conveyed to Singapore, from whence they are forwarded to Europe or China. According to information received from these merchants the finest birds come from the northern coast of New Guinea, the Sultan of Tidore receiving annually a certain number of the skins obtained within his territory as tribute.

The TRUE BIRDS OF PARADISE (*Paradisææ*) possess a plume of long split feathers, placed at the first joint of the wings, growing from a portion of skin about an inch in length, which can be spread out or folded up at pleasure. The females are without this appendage. The two middle tail-feathers are usually extremely long, and become enlarged at the tip.

THE FOOTLESS BIRD OF PARADISE.

The FOOTLESS BIRD OF PARADISE (*Paradisæa apoda*), as it has been called, to perpetuate the memory of the fables to which we have alluded, is a species about thirteen inches long. The predominant colour of the plumage is a beautiful chestnut brown, the forehead a rich black, shaded with emerald green; the top of the head and upper part of the neck are lemon coloured, the throat greenish gold, the upper throat violet brown; the long, feathery plumes at the sides are a brilliant orange, spotted with purple at their tips, but these soon lose their freshness and beauty when long exposed to the rays of the sun. The eye is pale yellow, the beak and feet blueish grey. The colour of the female is brownish grey upon the upper part of the body, the throat is greyish violet, and the belly reddish yellow. This bird appears exclusively to inhabit the island of Aru.

THE WUMBI.

The WUMBI (*Paradisæa Papuana*) is somewhat smaller than the species last described, not exceeding twelve inches in length. The back of this bird is chestnut coloured; the lower parts of the body a deep reddish brown; the top of the head, nape, and upper part of the throat and sides are pale yellow; the feathers upon the brow and beak black, with a green gloss; the throat emerald green; the eye is of a whitish yellow, the beak and feet deep blue. The young bird, on first leaving the nest, is entirely brown; the upper portions of the body being of a deeper shade than the rest; the tail-feathers are of equal length, the two centre ones terminating in a slight tuft; after the first moulting, the head and nape of the neck are pale yellow, and the brow and throat gleam with metallic green; the two centre tail-feathers are a few inches longer than those in the first plumage. After the third change, these feathers are prolonged into mere bare shafts, measuring about fifteen inches; and the beautiful plumes begin to sprout from the sides, growing until at last they attain the enormous length of fifty or sixty inches, and in very old birds have been known even to exceed that size. Rosenberg tells us that this species is found upon the islands of Meisol and Salawati in considerable numbers; upon the eastern coast of New Guinea it is more scarce.

THE RUBY OR RED BIRD OF PARADISE. (*See Coloured Plate VIII.*)

The RUBY OR RED BIRD OF PARADISE (*Paradisæa rubra*) is distinguished from the preceding species by a golden green plume, with which the front of its head is decked. The back is russet yellow, a streak of this colour passing like a broad band over the breast and under side of the body; the breast and the wings are reddish brown, the base of the beak and a patch behind the eyes are velvety black; the throat emerald green. The plumes upon the sides are of a magnificent red, each feather terminating in a circular tip; the tail-feathers have long shafts, which curl outwards; the eye is light yellow; the back and feet greyish blue. In the female the forehead and throat are of a rich brown; the upper part of the body and belly reddish brown, the back of the head, throat, and breast bright red.

The Red Bird of Paradise is extremely rare, as it is only found, and that in small numbers, upon the island of Waigiou. The three species we have mentioned closely resemble each other in their habits: all are lively and intelligent, exhibiting (if we may so term it) a certain amount of coquetry in the manner in which they display their glorious plumage. Travellers who have seen these splendid creatures hovering in their native element speak with rapture of their beauty; and Lesson tells us that on one occasion he quite forgot to fire at a magnificent specimen as he watched his intended victim float away—

“ Upon its waving feathers poised in air—
Feathers, or rather clouds of golden down,
With streamers thrown luxuriantly out
In all the wantonness of wingèd wealth.”

According to Rosenberg, the Birds of Paradise are migratory, living partly upon the coast and partly in the interior of the country, which they visit as soon as the fruit is quite ripe. We have seen a flock of these beautiful creatures winging their way to a tree, that after having been fired upon, returned almost immediately to the same spot; but this is by no means usual—on the contrary, as a rule they are extremely shy, and very difficult to obtain with the gun. Their cry is hoarse, and often followed by a scraping kind of sound; it may be heard both in the morning and evening, but rarely during the day. Lesson tells us that whilst creeping amongst the branches in search of the insects that constitute their favourite food, they utter a soft clucking note, entirely unlike their call, which is only heard when the bird is perched high upon the tops of the trees. During the entire day their graceful forms may be seen flying incessantly from one tree to another, never remaining perched for more than a few minutes upon the same branch, and concealing themselves among the foliage at the first suspicion of danger. Before sunrise they are already on the alert, and busied in their search for the fruit and insects upon which they subsist; in the evening all the various members of the party congregate at the summit of a high tree, where they pass the night. Lesson informs us that the Bird of Paradise is often seen flying in parties of some forty or fifty, under the guidance of a leader, who soars considerably above the flock he is conducting; their cries as they struggle with the wind are not unlike those of the Starling; when much incommoded by a strong breeze their note resembles the call of the Raven. Should a storm arise, they will at once soar high into the air, as though to escape the power of the blast; but in spite of all their efforts they are often rendered completely helpless, as the wind blows aside and entangles their long tails and waving plumes, and not unfrequently forces them to fall heavily to the earth, or into the sea; many are thus drowned, and others are obliged to lie upon the ground until they have recovered sufficiently from the shock to arrange their disordered and matted feathers. On the eastern and northern coast of North Guinea and in Meisol, the breeding season commences in May, but upon the western coast and in Salawati the eggs are not laid till November.

Lesson is of opinion that the Bird of Paradise lives in a state of polygamy, and tells us that the males are most active in their endeavours to show their glorious apparel to full advantage when desirous of attracting the attention of the females. We learn from Rosenberg that in order to obtain the Bird of Paradise, the natives, during the dry season, build little huts of twigs and leaves amongst the branches in one of the trees usually selected as a sleeping-place. About an hour before sunset this leafy bower is occupied by a man who is considered to be a practised shot; silently he crouches until the flock begins to arrive, and then one after another he marks them out and strikes them to the ground, with an arrow armed with a conical wooden cap as large as a teacup, so arranged as not to injure the plumage of the bird. In some places lined twigs are employed for this purpose, and in others snares are laid upon the branches of the fruit-trees in such a manner as to entangle the foot of the unsuspecting victim, who, when thus caught, is at once drawn down by means of a long string.

Mr. Wallace gives the following interesting account of his experience among these beautiful creatures in their native haunts:—"When I first arrived" (at Waigiou) "I was surprised at being told there were no Birds of Paradise at Muka, although there were plenty at Bessir, a place where the natives caught them and prepared the skins. I assured the people I had heard the cry of these birds close to the village, but they would not believe that I could know their voice. However, the first time I went into the forest I not only heard but saw them, and was convinced there were plenty about; but they were very shy, and it was some time before we got any. My hunter first shot a female, and I one day got close to a very fine male. He was, as I expected, the rare red species, *Paradisea rubra*, which alone inhabits the island, and is found nowhere else. He was quite low down, running along a bough searching for insects, almost like a Woodpecker, and the long, black, ribbon-like filaments in his tail hung down in the most graceful double curve imaginable. I covered him with my gun, and was going to use the barrel, which had a very small charge of powder and number eight shot, so as not to injure his plumage, but the gun missed fire, and he was off in an instant among the thickest jungle." After describing other unsuccessful attempts, Mr. Wallace proceeds:—"At length the fruit ripened on the fig-tree close by my house, and many birds came to feed upon it; and one morning, as I was taking my coffee, a male Paradise Bird was seen to settle on its top. I seized my gun, ran under the tree, and gazing up, could see it flying across from branch to branch, picking a fruit here, and another there, and then, before I could get a sufficient aim to shoot to such a height (for it was one of the loftiest trees of the tropics), it was away into the forest. They now visited the tree every morning, but stayed so short a time, their motions were so rapid, and it was so difficult to see them, owing to the lower trees which impeded the view, that it was only after several days' watching, and two or three misses, that I brought down my bird—a male in the most magnificent plumage."

We are indebted to Dr. Bennett for the following graphic account of a Bird of Paradise, which lived for nine years in the aviary of Mr. Beale of Macao:—"This elegant creature has a light, playful, and graceful manner, with an arch and impudent look; dances about when a visitor approaches the cage, and seems delighted at being made an object of admiration; its notes are very peculiar, resembling the cawing of the Raven, but its tones are by far more varied. During four months of the year, from May to August, it moults. It washes itself regularly twice daily, and after having performed its ablutions throws its delicate feathers up nearly over the head, the quills of these feathers having a peculiar structure, so as to enable the bird to effect this object. Its food is boiled rice mixed up with soft egg, together with plantains, and living insects of the grasshopper tribe; these insects, when thrown to him, the bird contrives to catch in its beak with great celerity; it will eat insects in a living state, but will not touch them when dead. I observed the bird, previously to eating a grasshopper, place the insect upon the perch, keep it firmly fixed with the claws, and divesting it of the legs, wings,



1847
MADE IN GREAT BRITAIN
THE PARADISE BIRD
Tardisia rubra
(Three fourths life size)

&c., devour it, with the head always placed first. It rarely alights upon the ground, and so proud is the creature of its elegant dress that it never permits a soil to remain upon it, and it may frequently be seen spreading out its wings and feathers, and regarding its splendid self in every direction, to observe whether the whole plumage is in an unsullied condition. The sounds uttered by this bird are very peculiar; that which appears to be a note of congratulation resembles somewhat the cawing of a



THE RESPLENDENT EPIMACHUS (*Seleucides resplendens*).

Raven, but changes to a varied scale in musical gradations—a *he, hi, ho, how*, repeated frequently and rapidly, as briskly and playfully he hops round and along his perch, descending to the second perch to be admired, and congratulate the stranger who has made a visit to inspect him. He frequently raises his voice, sending forth notes of such power as to be heard at a long distance, and as it would scarcely be supposed such a delicate bird could utter. These notes are *whack, whack, whack*, uttered in a barking tone, the last being in a low note as conclusion. A drawing of the bird of the natural size was

made by a Chinese artist. This was taken one morning to the original, who paid a compliment to the artist by considering it one of his own species. The bird advanced towards the picture, uttering at the same time its cawing, congratulatory notes; it did not appear excited by rage, but pecked gently at the representation, jumping about the perch, knocking its mandibles together with a chattering noise, and cleaning them against the perch, as if welcoming the arrival of a companion. After the trial with the picture a looking-glass was brought, to see what effect it would produce upon the bird, and the result was nearly the same; he regarded the reflection of himself most steadfastly in the mirror, never quitting it during the time it remained before him. When the glass was removed to the lower from the upper perch he instantly followed, but would not descend upon the floor of the cage when it was placed so low. It seemed impatient, hopping about without withdrawing its gaze from the mirror, uttering the usual cawing notes, but with evident surprise that the reflected figure (or, as he seemed to regard it, his opponent) imitated so closely all his actions, and was as watchful as himself. There was, however, on his part no indication of combativeness by any elevation of his feathers, nor was any irritation displayed at not being able to approach nearer to the supposed new comer from his own native land. His attention was directed to the mirror during the time it remained before him, but when removed he went quietly and composed himself upon the upper perch as if nothing had excited him. One of the best opportunities of seeing this bird in all its beauty of action as well as display of plumage is early in the morning, when he makes his toilet; the beautiful sub-alar plumage is then thrown out and cleaned from any spot that may sully its purity by being gently passed through the bill; the short, chocolate-coloured wings are extended to the utmost, and he keeps them in a steady flapping motion, as if in imitation of their use in flight, at the same time raising up the delicate long feathers over the back, which are spread in a chaste and elegant manner, floating like films in the ambient air. When it has picked and thoroughly cleaned its feathers, elevating its tail and long shaft feathers, it raises the delicate plumage of a similar character to the sub-alar, forming a beautiful crest, and throwing up its feathers with much grace, appears as proud as a lady in her full ball dress. His prehensile power in the feet is very strong, and, still retaining his hold, the bird will turn himself round on his perch. He delights to be sheltered from the glare of the sun, as that luminary is a great source of annoyance to him if permitted to dart its fervid rays directly upon the cage. This bird is not at all ravenous, but eats rice leisurely, almost grain by grain."

THE KING OF THE BIRDS OF PARADISE.

The KING OF THE BIRDS OF PARADISE (*Cincinurus regius*) may be selected as representing the SPIRAL TAILS (*Cincinurus*), as the various species composing the second group of this family have been called. In size it is inferior to any of its congeners as yet described; it is, moreover, distinguished from them by the delicacy of its beak and by the less remarkable development of the plumes with which its sides are adorned. The two centre tail-feathers twine like the tendrils of a vine, and are entirely without a web, except at their extremity, which is furnished with a wheel-like feathery expansion. The male of this species is of a ruby red upon the upper portions of the body; the brow and top of the head are orange, the throat yellow, and the belly greyish white; the eyes are surmounted by a small black spot, and a band of metallic green divides the dark-coloured breast from the shades upon the belly; the feathers upon the sides are grey, marked with irregular white and red lines, and terminate in a bright emerald green tip. The female is reddish brown upon the upper part of the body, and below of a reddish yellow streaked with brown; the wings are gold colour, the beak is dark brown, and the feet light blue.

This species is found over a larger extent of country than any other member of its family, occupying not only a large portion of North Guinea, but most of the surrounding islands, where it

frequents the bushes growing upon the sea-coast. Its movements are extremely restless, and, like other Birds of Paradise, it seems to revel in its own beauty as it spreads its plumage and raises the golden collar round its throat, meanwhile demonstrating its satisfaction by uttering a soft noise not unlike the mewling of a kitten. Writers of former days inform us that these beautiful creatures fly about in parties under the guidance of a male bird distinguished from the rest by the superior development of the tail, and that the flock are inconsolable if they lose their leader; but more modern naturalists do not mention this supposed peculiarity, which we must therefore regard as a fable.

THE COLLARED BIRD OF PARADISE.

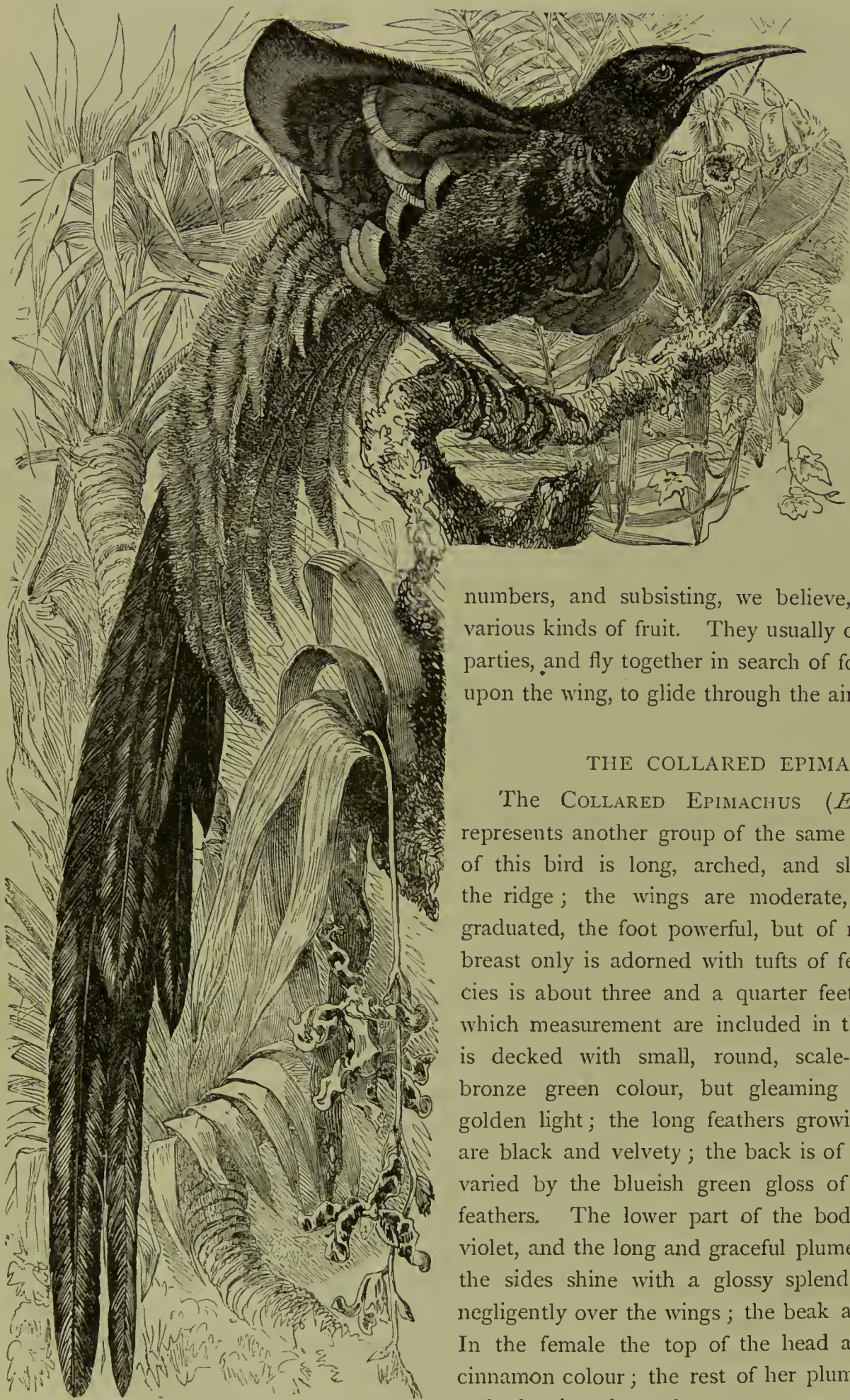
The COLLARED BIRD OF PARADISE (*Lophorina superba*) is an extremely rare species, inhabiting Northern New Guinea. It is distinguished by the long feathers by which the upper part of its back and the nape of its neck are surmounted, the latter even extending over the breast, and thus forming a kind of collar; but there are no elongated feathers upon the sides, and it wants the webless stems found on the tail of some species; the plumage in general is black, the long feathers upon the breast are of a brilliant metallic green; the flowing feathers of the shoulder fall like a mantle over the body, and can be raised when the bird is desirous of appearing in all its beauty.

The SIX-FEATHERED BIRD OF PARADISE (*Parotia sex-pennis*) represents a race of extremely beautiful and rare creatures, which, owing to the peculiarities of their plumage, have been classed as a separate tribe under the name of PAROTIA. In these birds the side feathers are much elongated, but not disintegrated, as in the species described above; the tail is graduated, and none of its feathers are destitute of a web. Upon the head and behind the ear are placed six long shafts, from which the members of this group have derived their name, each terminating in a feathery web. The plumage is of a deep black, except upon the breast, which is golden green.

The gorgeously attired EPIMACHI resemble the Birds of Paradise in the peculiar elongation of the side and tail feathers and in the construction of their feet; the beak alone differs in its formation, being long, thin, and delicately curved.

THE RESPLENDENT EPIMACHUS.

The RESPLENDENT EPIMACHUS (*Seleucides resplendens*, or *Seleucides alba*) is recognisable by the tufts upon the breast, formed of large, rounded, and brightly bordered feathers, and by the graceful plumes that adorn its sides; these latter are downy in their upper portions, and terminate in very long and webless shafts. According to Rosenberg, this extraordinary bird is about thirty-two and a half inches in length. The velvet-like feathers of the head, neck, and breast are black, but gleam with a deep green or violet shade; the tufts upon the sides of the breast are also black and edged with dazzling emerald green; the plumes upon the sides are of a splendid golden yellow, but soon lose their brilliancy after death, changing to a dirty white; the wings and tail are glossy violet, and appear in some lights to be marked with stripes. The plumes for which this species is so celebrated are most remarkable; the longest of them reach to the tail, and there terminate in long, horsehair-like threads of a bright yellow towards their root, and for the rest of their length of a brown colour. The eyes are scarlet, the beak black, and the feet of a yellowish flesh tint. In the female the top of the head and lower part of the throat are black, the velvety feathers upon the head shining with a bright purple lustre; the lower part of the back, the wings, and tail are reddish brown, the large quills being black upon their inner web; the whole of the lower parts of the body are greyish white or a dirty yellowish brown, marked with small undulating black streaks. The young males at first



resemble their mother, but after the first moulting the throat is grey, after the second the belly acquires its yellow tint, and the tufts upon the sides begin to make their appearance.

The Resplendent Epimachus is found exclusively upon the island of Salawati, frequenting rocky districts in considerable

numbers, and subsisting, we believe, upon insects and various kinds of fruit. They usually congregate in small parties, and fly together in search of food, seeming, when upon the wing, to glide through the air with great facility.

THE COLLARED EPIMACHUS.

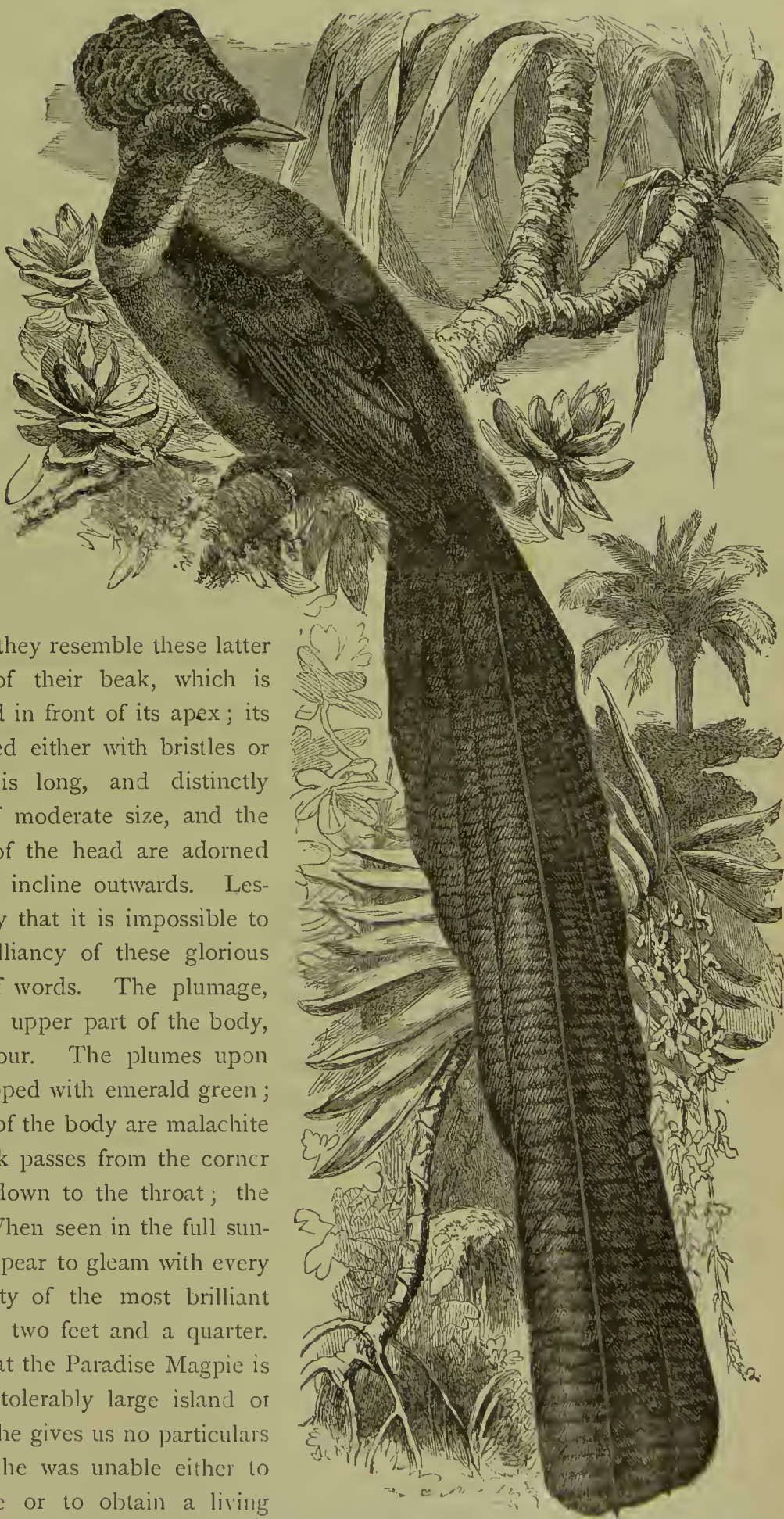
The COLLARED EPIMACHUS (*Epimachus magnus*) represents another group of the same family. The beak of this bird is long, arched, and slightly rounded at the ridge; the wings are moderate, the tail long and graduated, the foot powerful, but of no great size; the breast only is adorned with tufts of feathers. This species is about three and a quarter feet long, two feet of which measurement are included in the tail. The head is decked with small, round, scale-like feathers of a bronze green colour, but gleaming with a blue and golden light; the long feathers growing upon the nape are black and velvety; the back is of similar colour, but varied by the blueish green gloss of many long, broad feathers. The lower part of the body is of a blackish violet, and the long and graceful plumes that sprout from the sides shine with a glossy splendour as they hang negligently over the wings; the beak and feet are black. In the female the top of the head and nape are of a cinnamon colour; the rest of her plumage resembles the male, but is rather paler.

THE COLLARED EPIMACHUS (*Epimachus magnus*). This splendid creature is so mutilated during its

preparation for sale by the natives, that we believe no perfect specimen has as yet been brought to Europe. Rosenberg tells us that it inhabits New Guinea, but is never seen upon the surrounding islands.

Some naturalists place among the Birds of Paradise two species, of which we know very little, that have been named the

MAGPIE BIRDS OF PARADISE (*Astrapia*); others regard them as belonging to the Thrushes, as they resemble these latter birds in the construction of their beak, which is straight, and slightly flattened in front of its apex; its base, moreover, is unfurnished either with bristles or velvety feathers; the tail is long, and distinctly graduated; the wings are of moderate size, and the legs powerful; both sides of the head are adorned with a tuft of feathers which incline outwards. Lesson and other naturalists say that it is impossible to describe the beauty and brilliancy of these glorious creatures by any selection of words. The plumage, which is purple black on the upper part of the body, gleams with metallic splendour. The plumes upon the head are blueish red, tipped with emerald green; the whole of the lower parts of the body are malachite green; a reddish violet streak passes from the corner of the eyes in a semicircle down to the throat; the legs and beak are black. When seen in the full sunlight these gorgeous birds appear to gleam with every conceivable effect and variety of the most brilliant colours; their length is about two feet and a quarter. We learn from Rosenberg that the Paradise Magpie is found exclusively upon the tolerably large island of Obi, near Gilwick Bay, but he gives us no particulars as to its life and habits, as he was unable either to observe it in the wild state or to obtain a living specimen.



THE MAGPIE BIRD OF PARADISE (*Astrapia gularis*).

THE RAVENS PROPER (*Coraces*).

THIS family comprehends some of the largest members of the order. In these birds the beak is large, strong, curved towards the point, and toothed on its cutting edge, the upper mandible being only occasionally slightly hooked; the wings are of moderate size, and rounded at their extremities, the fourth quill being larger than the rest; the tail is formed by twelve feathers, which are either graduated or straight at the extremity. The plumage is rich, and its feathers large, those at the base of the beak usually resembling hairs or bristles; the rest are extremely glossy. Both sexes are alike in colour, and the young differ but little from the parent birds.

The Ravens inhabit every part of the globe, their mode of life and appearance varying slightly, according to the climate in which they live. Warm countries, however, appear more congenial to them than the northern parts of the earth, where they are met with in comparatively small numbers. By far the greater number are stationary, rarely, if ever, leaving the place that gave them birth, except to make short excursions in the neighbourhood, whilst others migrate to countries at no great distance from their native land. If we except the power of song, the Ravens combine in themselves every gift possessed by any members of the order to which they belong. They move with ease upon the ground, fly rapidly and lightly, and are remarkable for the very equal development of all their faculties, including the sense of *smell*.

This family has been divided into many groups, all of which present very marked peculiarities.

The MOUNTAIN CROWS, or CHOUGHS (*Fregili*) are recognised by their long, slender bodies, long wings, and short tails; their beaks are slender and pointed, slightly arched, and, like their feet, brightly coloured. Their plumage is black and glossy. Europe has two species of these birds, and several others inhabit India and Australia.

THE CHOUGH.

The CHOUGH, or MOUNTAIN CROW (*Fregilus graculus*) is distinguished by the peculiar formation of its long, thin, arched beak, which, like its short-toed foot, is of a brilliant scarlet colour. The eyes are dark brown, and the plumage of an uniform glossy blueish black. This species is about fifteen inches long and thirty-one inches across; the wing measures ten and a half inches, and the tail five and a half inches. The female is scarcely distinguishable from her mate, but the young are known by their black feet and beak; after the first moulting, however, they resemble the older birds.

Almost all the mountains of Europe afford a home to these Crows, which are met with in considerable numbers in Scotland, in Cornwall, and in Wales: in Spain they are very abundant, but are comparatively rare among the Swiss Alps. In most of the mountains that they frequent they occasionally ascend to the summits of the loftiest peaks, and are usually found as high as the snow-line, descending to the valleys in severe winters. Travellers in these mountain regions often hear the voices of thousands of these birds from amongst the rocks, and those who take the trouble to observe their movements soon perceive that they appear with a certain kind of regularity in the same localities, generally leaving their sleeping-place early in the morning to search for food, and returning about nine o'clock to their perch; before noon they again leave, and again return to pass the mid-day hours in the holes with which their favourite haunts abound, keeping, however, a vigilant watch against intruders, even when enjoying their noontide rest, and giving warning of any approaching danger with loud and piercing cries; nor are these precautions by any means superfluous, seeing that Hawks and others of their enemies are always on the alert to seize an unwary straggler, which, on such occasions, usually

endeavours to hide itself by creeping into the depths of some adjacent hole. In the afternoon the whole party again goes several times in search of food, and returns at night to sleep upon the usual perch. According to Bolle, this species is rarely seen in the Canary Islands; and, indeed, many other spots which would appear to offer it a most desirable home, are, most unaccountably, never visited by this shy and unenterprising bird. It is only when we learn upon what food the Chough subsists that we appreciate the full value of its many services; for it lives principally upon insects, grasshoppers, spiders, and, in Spain, it also devours scorpions in large numbers, raising the stones under which such creatures live by the aid of its beak, or digging up the ground in search of them.

The breeding season commences early in spring; the nest, which is often very difficult to find, being placed in holes in the rock, is constructed of dry stalks or hay, well lined with moss: the eggs, four or five in number, are whitish or dirty yellow, marked with dark brown spots and streaks. The female broods alone, but both parents assist in the heavy task of feeding the young, an operation which is carried on amidst an indescribable amount of noise and general confusion. So extremely social are these birds that they remain in company even during the period of incubation. Though, like other Ravens, they have doubtless little respect for property, still, on the whole they live peacefully, even when in large flocks, and courageously assist their companions when in danger. Should one of the party be injured the rest immediately surround it with every indication of sympathy, and we have known a case in which a Chough that had broken its wing was fed by its companions until it could fly about and obtain its own food. When tamed these birds frequently become extremely interesting, and may be allowed to leave the cage, without any danger of their flying away.

THE ALPINE CHOUGH.

The SNOW CROW, or ALPINE CHOUGH (*Pyrrhocorax alpinus*) possesses a comparatively strong, yellow beak, of about the length of its head, and its plumage more nearly resembles that of a Black-bird than that of a Crow. The attire of the adult is of a rich velvety black, the feet are red. Whilst young the feathers are of a paler tint, and the feet yellow.

In size and habits the Alpine Chough closely resembles the species last described—indeed, it may be regarded as holding the same place among the pinnacles of Alpine ranges as that occupied by the Lark in our corn-fields, or the Seagull on our coasts. Tschudi tells us that two of these birds were seen by Meyer during his ascent of the Finsteraarhorn, at an altitude of more than 13,000 feet above the level of the sea, and they are frequently known to inhabit regions that are entirely uninhabitable by man, or even by the quadrupeds that occasionally are found at very considerable altitudes. Travellers who attempt the most precipitous and apparently desolate passes are astonished to find that they are greeted by a noise which they could never have supposed to have existed amongst the lofty peaks of the solemn and majestic Alps, and soon find themselves beset by swarms of Snow Crows, who scream and quarrel among themselves as they hover over the heads of their unusual visitors, or perch upon a neighbouring pinnacle the better to observe their movements. The utmost severity of the winter will not drive them to seek a home in the country that lies beneath, upon which they, however, occasionally descend in large flocks, making the air resound with hoarse caws, or shrill cries, as they search for berries in the bushes that abound in Alpine valleys. Almost any kind of food is consumed by them with avidity, but they manifest a decided preference for snails of various kinds—indeed, upon one occasion we found no less than thirteen of these destructive molluscs in the crop of a Snow Crow that we had killed: like birds of prey, they will occasionally follow living animals, and devour dead carcasses with the greatest eagerness. The author from whom we quote tells us that he has known these birds to rush down from their retreats at the first report of a gun, and join in the pursuit of the intended victim with the utmost excitement, and mentions an instance in which a flock of Alpine

Choughs hovered for months over a precipice, beneath which lay the whitened bones of a hunter who had met his death in pursuit of a chamois, and whose flesh they had eaten. Most noisy are the altercations while these creatures are at their disgusting meals, which are enlivened by a constant succession of vicious attempts to drive their companions from their prey. When devouring the smaller birds or quadrupeds the head is first attacked in order to obtain the brains.

The nest of the Snow Crow is but rarely found, being built in clefts or fissures of the steep rocks in which they live; it is large and flat, and is usually constructed of blades of grass. The eggs, five in



THE CHOUGH (*Fregilus graculus*).

number, in size resemble those of the Common Crow; the shell is light grey, marked with spots of a deeper shade. Successive generations often build upon the same place, which in time becomes so thickly covered with the excreta of its numerous occupants as to form beds of guano, which are largely employed as a valuable manure. When domesticated, says Savi, the Snow Crow exhibits great attachment to its owner, and becomes so tame as to fly quite freely about the house. It will consume almost anything eaten by the family, and prefers milk or wine to water. While eating, it seizes the morsel and tears it with the claws before swallowing it, and should the supply prove too large for present need the remainder is carefully put away, and hidden under scraps of paper or any available

covering, its owner keeping a very sharp look-out to prevent the discovery of his concealed treasure. So remarkable is its liking for *fire*, that we might imagine it to be the *Avis incendiaria* of the ancients ; it has been known to pluck the burning wick from a lamp and swallow it, or to draw small live coals from the hearth for this purpose, without any apparent ill effect, and so to delight in smoke as to take every opportunity of throwing a scrap of rag, wood, or paper into the grate, for the pleasure of seeing the light clouds ascend as it is consumed by the flames. The affection of this bird for those by whom it is tamed is remarkably demonstrative ; it seems to observe their absence, and greets them on their return with every expression of delight ; to some persons, on the contrary, it occasionally takes a most unaccountable aversion, and pecks and screams at them whenever they approach. The song of the Snow Crow is varied, and it has been known to whistle a simple air that it had been taught.

The TRUE RAVENS are distinguished by their large but rather short beak, which is more or less curved, and covered at its base with a number of black bristles ; the wings are of moderate size, and reach, when closed, to the end of the tail ; the feet are powerful, and the plumage a rich black, more or less glossy.

THE RAVEN.

The RAVEN (*Corax nobilis*), as the principal member of this group is called *par excellence*, is recognisable by its lengthy body, broad, long, and pointed wings, the third quill of which considerably exceeds the rest in length ; the tail is of moderate dimensions, and graduated. Its plumage is short, glossy, and uniformly black ; the eyes of the old birds are brown, those of the young blueish black, and those of the nestlings pale grey. The length of this species is about two feet, its breadth four and a quarter ; the wing measures seventeen inches, and the tail nine and three-quarters.

This Raven is spread over a much larger portion of the world than any of its congeners ; it inhabits the whole of Europe, as well as a great part of Asia, and is met with in the countries extending from the Altai Mountains to Japan. It is at present uncertain whether the very large Raven met with in North America is the same or only a similar species. Throughout some parts of Europe these birds dwell comparatively apart from man, preferring to inhabit such localities as mountains, dense forests, or rocky coasts, while others, that frequent the northern, southern, or eastern coasts of our continent, live on comparatively friendly terms with the lord of the soil, from whom their many objectionable habits do not meet with the same retribution as in the more central or western lands. Ravens usually live in pairs, and remain constantly together throughout their lives, passing their time principally in flying in company with each other over the surrounding country. When on the wing, their movements are extremely beautiful, they alternate between a rapid and direct flight, produced by a powerful stroke of the wings, these, like the tail, being kept outspread, and a hovering motion, that takes the form of a series of gracefully described circles, seeming to be produced without the slightest effort on the part of the birds, who occasionally amuse themselves by dropping suddenly to a distance of some feet, and then continuing their way as before. Upon the ground their gait is distinguished by a most absurd assumption of dignity, the upper portion of the body being held considerably raised, whilst they gesticulate with the head in a most laughable attempt to keep time with the movements of the feet. While perched the feathers are generally kept quite close, those only upon the head or neck being spread or ruffled when the creature is under the influence of strong emotion : the wings are always kept slightly raised from the body.

By the rest of its congeners the Raven would seem to be regarded with abhorrence, for they will fall upon and attack it with the utmost animosity ; and should it attempt to join a party of other species

of its family, they greet it with as noisy demonstrations of terror, as if the intruder were a Hawk or a Buzzard, and compel it at once to retire from amongst them. In its relations with man nothing can exceed the prudence and wariness of the Raven, its fear of molestation being so strong as to compel it even to desert its nestlings should an enemy approach, although its attachment to its offspring is usually both warm and constant. The voice of this bird is varied, and its manner of chattering to its mate during the period of incubation even more peculiar and incessant than that of the Magpie.

In voracity the Raven has but few equals, for not only will it eat almost all kinds of food, including fruit, corn, and every description of insect, but it will seize upon and devour creatures exceeding itself in size, and attack not only almost any quadruped from a hare to a mouse, but boldly engage the Seagulls in combat, when those birds seem inclined to dispute its right to invade their nests and despoil them of their young. Boldness and cunning, strength and dexterity, all seem to be united in the character of this daring marauder; it will attack domestic fowls, ducks, or young geese, and chase and destroy not only partridges, but hares and pheasants. In some parts of Ireland the Raven may be seen picking up its food in the vicinity of houses in company with dogs and cats, or prowling about on the sea-shore in search of fish. During the spring it destroys numbers of young lambs, or amuses itself by driving Eider Ducks from their nests to devour their eggs, and when it has satiated itself will conceal those that remain beneath the sand; even horses are not free from the attacks of these birds, which will settle upon the back of any wounded or suffering animal, and can only be dislodged after long and violent efforts. Eagles they do not venture to contend with, but follow in their wake in the hope of obtaining the remnants of their prey; in short, nothing that can be overcome by their strength, craft, or audacity is spared; they will even, it is said, devour the aged or nestlings belonging to their own species. We are assured that mussels form a part of the Raven's diet, the bird having first carried them into the air, and let them fall from a considerable height, to break their shells upon the rocks or stones beneath; they will also eat the hermit crab, which is obtained by rapping its shell until the unsuspecting creature creeps out to ascertain the cause of the disturbance. Despite the cruel and rapacious disposition of these birds, their deeds are not always deeds of evil; on the contrary, great and valuable are some of the services they often render to man, insomuch that by some nations they are regarded with the utmost favour—the Arabs, indeed, look upon them with such superstitious reverence as to imagine them to be immortal, and in Greenland and Iceland they are allowed to run tame about the houses. On the other hand, in the Canary Islands they are held in the utmost detestation by the shepherds, who maintain that they constantly peck out the eyes of young goats and lambs, and on this account wage an exterminating war against them.

The eyrie of the Raven is generally situated in the hole of a rock, or the summit of a high and inaccessible tree; it is usually about one foot deep, and from two to three feet wide; the exterior is formed of small branches, lined with a layer of twigs, and the interior, which is about nine inches in diameter, and four or five inches in depth, bedded with wool, fine grass, and similar materials, the utmost caution being employed by these birds, both when seeking materials and when building the large and strong cradle which year after year is resorted to for the purposes of incubation. The eggs, usually four or five in number, are large, and of a green colour, marked with brown and grey spots. Ravens are by no means deficient in care for their young, and labour incessantly to satisfy their ever-craving beaks with all kinds of animal food; should fear compel them to quit their charge, they perch as near the little family as safety will permit, and testify by plaintive cries and anxious flutterings their desire to return to their brood. When fully fledged, the young do not entirely leave the nest, but return every evening for some weeks, in order to pass the night in the snug warmth that it affords them, and perhaps to receive instruction during the day, as to the means to be employed in obtaining food; they probably leave their protectors only when the autumn approaches. When tamed the

Raven may be taught to speak with facility. It will likewise imitate a great variety of sounds, and those who can overlook its thievish propensities and tiresome habits will often derive considerable pleasure from watching its amusing tricks, and cultivating its really high capacities.

The VULTURE RAVENS (*Corvultur*), as two African members of this group have been called, are birds exceeding the Common Raven in rapacity as well as in size. Both these species have unusually thick beaks, compressed at their sides, the upper mandible being so decidedly bent as closely to resemble that of a Vulture; the third and fourth quills are longer than the rest; the tail is rather large, and slightly graduated.

The WHITE-NECKED VULTURE RAVEN (*Corvultur albicollis*) and the THICK-BILLED VULTURE RAVEN (*Corvultur crassirostris*), the former a native of the Cape of Good Hope, and the latter an



THE WHITE-NECKED VULTURE RAVEN (*Corvultur albicollis*).

inhabitant of Abyssinia, are much alike in their general appearance; both are of a glossy coal black, except upon the nape, which is white. In the Abyssinian species the sides of the neck gleam with a rich purple, and the rest of the coat is lighted up with a blue refulgence; the small feathers upon the wing-covers near the shoulder are a mixture of chestnut and black; and the white marks upon the nape extend upwards till they reach the top of the head; the eye is reddish brown, the feet and beak black, the latter being tipped with white. The length of this species is about three feet two inches, the length of wing one foot five inches, and of the tail nine inches. According to Rüppell, this bird inhabits the Abyssinian highlands, and is often found at an altitude of 5,000 feet above the level of the sea. Le Vaillant tells us that the Vulture Raven is voracious, daring, extremely noisy, and very filthy in its habits, subsists principally upon carrion, and destroys large numbers of sheep and gazelles, tearing out their eyes and tongue and then devouring them. Were it possible, it would readily

contend with buffaloes, elephants, cattle, or horses, but is compelled to rest content with following them and relieving such as are tormented with various parasites to which they are liable, the poor creatures often allowing the Vulture Raven to peck their hides till the blood flows rather than endure the perpetual irritation from which they suffer so severely. The nest of the Vulture Raven is built in October, and placed upon the branches of a tree; it is formed of twigs, lined with some soft material. The four eggs of which a brood is composed are green, spotted with brown. This species never migrates, but remains from one year's end to another near the same locality; occasionally it associates with its congeners, but never partakes of the food on which they subsist.



THE SCAPULATED RAVEN (*Pterocorax scapulatus*).

THE SCAPULATED RAVEN.

The SCAPULATED RAVEN (*Pterocorax scapulatus*) is a small species inhabiting Africa from eighteen degrees north latitude, distinguished by its peculiar plumage and moderate sized beak. The feathers are of a rich glossy black, except upon the upper part of the breast, which is of a dazzling white, as is also a broad patch over the scapular region; these lighter portions gleam like satin, and the deeper tints are brightened by a metallic lustre; the eye is light brown, the beak and feet black. The length of this bird is about eighteen inches, the wing measures thirteen inches, and the tail six inches. Throughout the whole of Soudan and the lower parts of Abyssinia the Scapulated Raven is found living in pairs, which rarely assemble in small parties, and appear to avoid mountain districts. In its general appearance this species is not unlike the Magpie; its flight is light, rapid, and hovering, and as it rises in the air with pointed wings and rounded tail fully displayed, after the



THE RAVEN (*Corax nohilis*).

manner of a Falcon, its elegance cannot fail to please the eye of the beholder, who may trace its course for a considerable distance as its snowy breast sparkles and gleams in the direct rays of the sun. When upon the ground its gait is very easy and dignified; its voice resembles that of the Raven. Wherever these birds make their abode they are soon on excellent terms with the human inhabitants, and rarely exhibit any fear of man, except when entirely unaccustomed to his appearance; they are regular visitors to some of the villages upon the coast, and will sometimes perch upon the straw huts of the natives. The eyrie of the Scapulated Raven is usually placed upon a tree. The eggs, four or five in number, are laid during the first month of the rainy season; in appearance they resemble those of the rest of the family. The parents are much attached to their young, and will dart like Falcons upon any stranger who may approach the nest. These birds are disliked by the natives, on account of their unclean habits, and their flesh is never employed as food.



THE CARRION CROW (*Corvus corona*).

The CROWS (*Corvus*) are distinguished from the Ravens by the comparative smallness of their beaks, by their rounded tails, and their lax and dull plumage. Two species are common in Europe—

THE CARRION CROW AND THE HOODED CROW.

The CARRION CROW (*Corvus corona*) and the HOODED CROW (*Corvus cornix*), are so alike in size and general formation, that if they were denuded of feathers it would be difficult to distinguish between them. They will frequently pair together, and both have been the subject of endless disputes as to whether they are slight varieties of the same species, or quite distinct from each other.

The Carrion Crow is entirely black, with a violet or purple lustre on its feathers, and brown eyes. The young are pale black, and their eyes grey. The plumage of the Hooded Crow, on the contrary, is only black upon the head, front of throat, wings, and tail; the rest of the body is ash colour. The young are of a dirty deep grey. The length of both these birds is from eighteen to

nineteen inches, their breadth is from thirty-eight to forty inches, the wing measures from twelve and a half to thirteen inches, and the tail seven to eight inches. These two species usually pass their lives in one limited district, or only leave their native haunts to make short excursions into the surrounding country. Wooded pastures are their favourite resorts, such situations being preferred as are in the immediate neighbourhood of man, whose orchards they are fond of visiting, though forests or even thick woods seem to be avoided by these social and intelligent creatures. Their senses are highly and equally developed; their sight, smell, and hearing are remarkably perfect, and their movements both in the air and upon the ground are light and rapid. Like the Raven, they render immense service to mankind by clearing great numbers of noxious insects from the fields and gardens; and though, like that bird, they attack wounded animals, or such as are smaller than themselves, and frequently rob nests of their contents, their troublesome propensities are far outweighed by the benefits they confer. At the first dawn of day they congregate in large numbers upon some tree or building preparatory to going in search of food, and from thence they wing their flight over the neighbouring fields and gardens in company with many of their congeners, examining every nook or furrow in search of their insect fare, robbing nests of their eggs, or pouncing upon mice as they run from their holes; so courageous are they that nobler birds of prey are often disappointed of their victims by the efforts of these comparatively feeble interlopers, who will pursue and dash round the tyrants of the air in such numbers and with so much energy as to compel them to relinquish their prey and retire from the field. At noon the parties of Crows retire to the pleasant shelter of some thickly-foliaged tree, there to sleep away the mid-day heat, going again in search of food during the afternoon, and re-assembling towards evening on their favourite perch to chatter to each other, and (apparently) discuss the events of the day in a manner with which all are familiar. The night is passed in some retired group of trees, the birds only taking possession of their roosting-place after it has been cautiously examined by several of their party, and entering it with so much wariness that no sound is audible beyond the soft fluttering of their wings. The period of incubation commences about February or March, and during this time the attachment of the male bird to its mate seems redoubled; his whole time appears to be occupied in rendering himself attractive in her eyes. The eyrie, which is built at the summit of a lofty tree, is not more than four inches deep, and is constructed of dry twigs, roots, or couch-grass, the interior being lined with wool, feathers, bristles, hair, or even with bits of rag. The nests are usually about two feet broad, and old nests are often repaired for the reception of the brood. The eggs, three to five, and occasionally six in number, are laid in April, and in colour are blueish green, marked with olive green, dark grey, or black spots and streaks. The female broods alone, but receives the most unremitting attention from her mate, who only quits her when compelled to go in search of food; both assist in the nourishment and care of their young, who are protected and defended from their numerous enemies with the utmost courage and devotion.

As we have already said, it is by no means uncommon for the Carrion Crow and the Hooded Crow to pair with each other; in such cases the plumage of the offspring combines the hues of both parents, and should these hybrid birds mate among themselves, their young, strangely enough, will often appear in the perfect plumage of one or other of the pure breed from which they are descended. Both species will live for a long time in confinement, but though capable of learning to imitate the human voice, they possess so many disagreeable tricks as to render their training a work of much labour and but little enjoyment; their bodies have an odour that makes it impossible to keep them in a dwelling room, and if permitted to run at large about the yard or garden they become so troublesome by their thievish propensities, and love of every bright or glittering object they may see, as to cause them to be regarded with little favour by their owners. Many are the enemies against which these birds have to contend, but none of them is so formidable an antagonist as the Horned

Owl, whose attacks are the more fatal from the circumstance that they always occur during the night, and thus render the possibility of eluding them almost hopeless; the Crows, however, take every opportunity of avenging themselves during the day, and fall upon their dreaded foe with the utmost ferocity; indeed, so strong is the hatred with which they regard their arch-enemy that those engaged in Crow shooting often fasten an owl immediately in front of the small huts under which they lie concealed, and fire upon the flocks of Crows as they come down in furious crowds to mob and worry their helpless persecutor.

THE ROOK.

The ROOK, or FIELD CROW (*Corvus frugilegus*, or *Frugilegus segetum*), is a most useful species, inhabiting all the plains of the south of Europe and the southern portion of Siberia, even as far as Afghanistan and Cashmere. These birds are distinguished by their slim appearance, the



THE ROOK (*Corvus frugilegus*).

decided elongation of their beaks, their long wings, abruptly rounded tails, close, glossy plumage, and by the bareness of the face observable in the old birds, occasioned, probably, by continually rubbing it upon the ground when in search of food. Their length is from about eighteen to nineteen inches, the breadth thirty-seven to thirty-nine inches, the wing measures thirteen to fourteen inches, and the tail ten and a half inches. The plumage of the adults of both sexes is an uniform purplish black, and that of the young birds pale black; the faces of the latter are covered with feathers. Unlike the members of the family described above, the Rooks migrate regularly, and in enormous swarms, towards Southern Europe and the north of Africa, everywhere preferring well-wooded and fruitful plains, and never settling upon mountains except whilst occupied in journeying from one country to another. Like their congeners, they assemble in flocks, usually choosing a clump of trees as a gathering point, from which they fly over the neighbourhood, and upon these they build their nests. In their habits they are more social than other Crows, freely associating with birds that are weaker than themselves, but exhibiting such fear of the Raven that they will vacate a favourite resort on its first appearance, even although they may be so attached to the locality as to refuse to quit it when men attempt to drive them from the spot. In bodily endowments and intelligence they are inferior to none of their family, but are far more timid and harmless in their disposition.

Their voice is deep and hoarse, and though they are capable of imitating sounds, they never attain the power of pronouncing words. In spite of the comparative amiability of disposition exhibited by the Rooks, they render themselves extremely troublesome in a variety of ways, almost deafening their hearers by their incessant cawing, and frequently doing considerable mischief by stealing fruit from the gardens or seed from the fields, and even giving proof of still more voracious propensities by strangling young hares or partridges. For the most part, however, the food of this species consists of cockchafers and their destructive larvæ or slugs; whilst in pursuit of these, their acute sense of smell



THE JACKDAW (*Monedula turrium*).

would seem to guide them to the exact spot under which they lie concealed, and so enormous are the numbers they dig up, that, as we have said, the hungry Rooks actually rub the feathers from their faces by constantly burrowing in the ground with their beaks. In the breeding season, numerous pairs build close together, quarrelling the whole time, and robbing each other incessantly of the materials collected. The female alone broods upon the eggs, which are usually four or five in number, of a pale green, spotted with dark brown. During the time of incubation comparative peace reigns in the colony; but no sooner are the nestlings hatched than the uproar is redoubled tenfold, as the hungry little ones clamour for food in most discordant tones from daybreak till the sun goes down.

Large numbers of Rooks are destroyed during their migrations, which are made in flocks of incredible magnitude; whilst flying in this manner from place to place they may sometimes be seen to delay their course for half an hour at a time, merely to enjoy the pleasure of hovering or performing a variety of evolutions on the wing, descending somewhat in their flight as they pass over mountains, and soaring high into the air when about to cross lowland districts; sometimes, as though again wishing to alight, they plunge directly earthwards, falling like a lifeless mass from two hundred feet above the ground, and then fly gently onwards for a short distance before again ascending to continue their journey. In the southern part of Europe, and in the north of Africa, the flocks are seldom met with of the enormous size above described, as before reaching so great a distance these large bodies have separated, and gone to spread themselves in less destructive numbers over the countries they select as winter quarters; despite this precaution, thousands perish from starvation, and we ourselves have seen hundreds covering the ground near Suez, the weary travellers not having found the food which they had come so far to seek.

THE JACKDAW.

The JACKDAW (*Monedula turrium*) is a very small species of Raven, distinguished from its congeners by its short, strong, straight beak, which is but slightly curved. The length of this bird does not exceed twelve inches, or twelve and three-quarters, its breadth is from twenty-four to twenty-five inches, the wing measures eight and a half inches, and the tail five inches. The plumage is deep black upon the forehead and top of the head, the back of the head and nape being dark grey; the upper part of the body is blue black, and the lower portions slate colour or pale black. The young are recognisable by their lighter tints and the grey colour of the eye. The Jackdaw is found throughout most of the countries of Europe and in many parts of Asia, occupying some places in large numbers, and entirely avoiding other districts with a fastidiousness for which we are unable to account: steeples, towers, or old buildings are the situations it prefers for building purposes, but it will also make its nests upon high trees or even shrubs. The disposition of this species is lively and its habits extremely social; indeed, it may be said to possess the gifts of the Crow, with but few of its disagreeable qualities. When upon the wing the flight of the Jackdaw is not unlike that of a Pigeon, and its mode of rising, falling, or performing a variety of evolutions remarkably graceful and easy. Its voice is capable of considerable development, and, like many other members of this family, it has but little difficulty in imitating human speech and other sounds; it chatters almost incessantly during the breeding season, but not offensively, for its tones are soft and very varied. Large quantities of insects, snails, and worms are devoured by these useful birds: they will seek their food in the streets or follow in the wake of the ploughman as he turns up the clods and lays the concealed grubs bare to their hungry beaks; they hunt for mice, young birds, and eggs with great dexterity, and will also feed upon roots, leaves, corn, and fruit.

Late in the autumn the Jackdaws leave us for warmer regions in company with the Rook, though but rarely journeying as far as that bird. The spring is usually far advanced before they return to their native haunts and commence their work of building or repairing their nests, which are extremely rude, being roughly formed of twigs or straw, and lined with hair, feathers, or hay. During these building operations the settlement is a constant scene of quarrelling, one bird stealing from another with the greatest audacity and cunning, and taking possession not only of the materials but of the places selected by their neighbours as snug and desirable localities. The young are fed upon insects and tended with great affection by their parents, who will also defend them from an enemy with much courage. Should an Owl or Buzzard venture to approach the colony, it is received with loud cries and immediately driven off by the infuriated Jackdaws, who often pursue the intruder to the distance

of some miles. Cats, Martens, Falcons, and Hawks are numbered amongst the most formidable of the enemies with which they have often to contend; the two first of these marauders plundering their nests, while the latter attack both old and young birds. Of all the members of the family, none are so well fitted for domestication; large numbers are caught annually for this purpose, as their great intelligence and pleasing disposition render them favourites with all lovers of the feathered tribes.

THE GLOSSY CROW.

The GLOSSY CROW (*Anomalocorax splendens*) is an inhabitant of the East Indies, and one of the most elegant of the many representatives of the family met with in that part of the world. In this bird the wings are so short as scarcely to reach the end of the long tail, and it has for this reason been classed as forming a distinct subdivision of the group to which it belongs. The length of the Glossy Crow is from fifteen to eighteen inches, seven inches of which are included in the tail; and the wing measures about eleven inches. The plumage upon the front of the head is a brilliant black, the back of the head, nape, and upper part of the throat are lively grey; the back, wings, and tail black, lighted up by a rich violet tint like tempered steel; the chin, breast, and sides of the neck are black, with a metallic lustre; the breast is dark grey, and the middle of the belly a dusky black, lightly marked with steel blue.

Jerdon tells us that the name given to this species has been entirely misapplied, as many of its congeners rival it in the brilliant gloss upon their coats. Every part of India affords a home to this beautiful bird, which is met with in all the towns and villages from Ceylon to the Himalaya Mountains, living upon the most friendly terms with man during the day, and passing the night in company with not merely its own kind, but with large parties of Parrots and Minas, amongst whom, as may be easily imagined, disputes and fights are of constant occurrence, and anything like quiet or harmony impossible. At dawn the whole party are awake, and at once commence their preparations for the business of the day by carefully preening their feathers, chattering with the utmost vivacity among themselves. The flock then divides into small parties of from twenty to forty birds, and fly over the surrounding country often to a distance of ten miles from the place where they slept. It may literally be said of the Glossy Crows that they live upon the crumbs that fall from man's table, for many of the natives take their meals outside their huts, and at such times are generally surrounded by these birds, who seize every morsel as it drops; indeed, so well do they understand what the lighting of a fire indicates, that the first appearance of smoke will attract them, and keep them hovering about the spot until the expected food is ready to be eaten. Others, again, will seek for crabs, fish, frogs, or insects, which they consume in large quantities, or follow Gulls and Sea Swallows in order to share their prey; some will search the fields for grubs, or relieve the cattle from the parasites by which they are tormented; others spend the day in robbing the banana-trees of their fruit, or hunt the winged Termites in company with Bee-eaters, Kites, or even Bats. During the heat of the summer they may be seen sheltering themselves under some thickly-foliaged branch from the power of the sun, and with beak wide open, seem to pant for a breath of cool fresh air. The breeding season extends from April to June; and the nests, which are placed upon trees or the corners of a house, are formed of twigs, lined with a bed of some soft material. The brood consists of four greenish-blue eggs (spotted and marked with brown), this number being frequently increased by the addition of a Cuckoo's egg, that bird seeming to have a decided preference for their nests when in search of a home for her offspring.

The flight of these Crows is light and tolerably rapid. When pursued by an enemy they are very dexterous in eluding its attacks—indeed, their courage, intelligence, and cunning are so highly developed as to render them most interesting. Blyth tells us that they disport themselves about the houses with great confidence, running hither and thither in a constant bustle, as though each moment

was of value and could not be wasted in idle loitering, at the same time uttering their cry, which is unbearably noisy. The inhabitants of Ceylon observe these birds with great attention, and have many superstitions based upon the course of their flight, the kind of trees on which they settle, or the numbers in which they appear—indeed, the proceedings of the Glossy Crow would seem to be regarded with the same attention and anxiety as was the flight of ominous birds amongst the Greeks and Romans. The Dutch, during the time that they possessed Ceylon, also showed considerable favour to this species, and decreed heavy punishments for those who killed them, believing them of



THE NUTCRACKER (*Nucifraga caryocatactes*).

great service in promoting the growth of cinnamon by devouring the ripe fruit and scattering the undigested seeds over the surrounding country.

Endless are the annoyances to which the inhabitants of Ceylon are exposed by the thievish propensities of these daring pilferers, who will watch the windows of the houses, to steal every article that it is in their power to remove, and not unfrequently open packets, or even unknot a cloth, if they fancy that anything eatable is contained within its folds. On one occasion a party of people seated in a garden were much startled by the sudden appearance of a clasp-knife covered with blood, which fell amongst them as if coming from the clouds, and, on instituting inquiries, at last ascertained that the formidable missile had been stolen from the cook, who, in an unlucky moment, had turned his head

aside, and thus given one of these expert thieves the opportunity for which it was waiting. A still more amusing anecdote is told by Tennent of a Glossy Crow, who, having long attempted by every conceivable device to divert the attention of a dog from a bone that it wished to secure, and its efforts proving fruitless, retired in search of a friend, who at once perched upon a tree, and endeavoured to attract the attention of the dog, but all in vain; at length, rendered desperate by repeated failures, the new comer darted down with great violence upon the owner of the coveted bone; the dog, to revenge itself, sprang upon the intruder, while the cunning instigator of the commotion crept quietly to the spot, and secured the prize.

THE NUTCRACKER.

The NUTCRACKER (*Nucifraga caryocatactes*) belongs to a group of Ravens met with in most various and distant parts of the globe, some of its members inhabiting the whole of the north of Europe and



THE FLUTE BIRD (*Gymnorhina tibicen*).

a large portion of Asia, while others are found both in America and on the Himalaya Mountains. The body of this bird is slender, the neck long, the head large and flat, with a long, slender, and rounded beak, the upper mandible being straight, or only very slightly curved. The wings are of moderate size, blunt, and graduated, the fourth quill being longer than the rest; the tail is short, and rounded at its extremity; the feet are strong, and furnished with powerful toes, armed with strong hooked claws. The plumage is thick and soft; its predominating colour is a dark brown, without spots upon the top of the head and nape, although elsewhere each individual feather is tipped with an oval mark of a pure white; the wings and tail-feathers are of a brilliant black, the latter being tipped with white at their extremities; the under tail-covers are likewise white; the legs are brown, and the beak and feet black. It is from thirteen to fourteen inches long, and from twenty-two to twenty-three and a half inches broad; the tail measures about five inches.

This species frequents thickly-wooded mountains, and the wide-spread forests of Northern Europe and Asia, showing a decided preference for districts covered with Siberian pines, and may be met with in considerable numbers in certain localities, while in others, in the immediate vicinity, it will be entirely wanting: in Sweden it is exceedingly common, but is seldom seen in Norway. In appearance the Nutcracker is awkward and clumsy, but in reality it is extremely active and adroit, walking upon the ground with ease, and climbing, or suspending itself from the branches with the dexterity of a Titmouse; its flight is light but slow, and is produced by powerful strokes and broad extensions of the wings. The voice is a loud, screeching, resounding cry, and though most of its senses appear to be very equally developed, its intelligence will not bear comparison with that of most other members of the family.

But little is known about the habits of these birds during the breeding season, for their nests are usually built in the inmost recesses of some thicket almost inaccessible to man. March, we are told, is the month in which they lay their eggs, and, if this be the case, they must in many places undertake the cares of a family whilst snow still lies deep upon the ground. The nest, as we learn from Schütt, is neatly formed of dried fir twigs, woven together with the green leaves of the same tree, probably for the purpose of decorating the exterior; it is lined with a layer of moss or young bark, beautifully worked in, which gives a round and finished appearance to the interior. The eggs are pale blueish green, marked here and there with light brown spots. Like other Ravens, the Nutcracker subsists principally upon insects, seeds, and fruit, but displays many of the propensities of birds of prey; it attacks a great variety of animals weaker than itself, and after biting them in the neck, breaks open their head and devours the brains. We have heard of an instance in which one of these birds ate a squirrel that was laid before it. Hard nuts are among the favourite articles of their food, and it is most curious to see them seize one in their claws and dexterously crack it, always keeping the broad end carefully uppermost during the process: in this manner they will rapidly dispose of a large supply.

The PIPING CROWS (*Phonygamæ*) are short-tailed Ravens, with very long conical beaks; the upper mandible is hooked, and armed with teeth-like appendages near the tip; the wings are pointed, and the tail slightly rounded. These birds are distinguished from the rest of their family by many peculiarities; they live much upon the ground, and, though they do not avoid dry parts of the country, prefer marshy districts near the sea-coast. Upon the ground their movements are remarkably active, and they exhibit considerable agility among the branches of trees, but their powers of flight are very inferior to those possessed by their congeners, and, unlike them, they never mount into the air or perform any remarkable evolutions. They feed upon insects of all kinds, but more especially upon locusts and grasshoppers, and sometimes rob nests of other birds to devour the eggs and young; they will also eat seeds, fruit, or corn in such quantities as to render them extremely troublesome to the settlers. We learn from Gould that the Piping Crows lend a great charm to the places they frequent, as they hop nimbly and gracefully about, uttering their clear flute-like cry, which is constantly heard when they are resting on the trees in small parties of from four to six birds. The nests are formed of twigs, lined with grass or other suitable material, and resemble those built by European Crows. The brood consists of from three to four eggs; the young are fed by both parents, who display great courage in defence of their little family; their growth is rapid, and, after the first moulting, they acquire the same plumage as the adults. As an example of this musical race we may select

THE FLUTE BIRD.

The FLUTE BIRD (*Gymnorhina tibicen*) is a species of Crow, about sixteen and a half inches in length. Its plumage is principally black, but the nape, lower part of the back, lower tail-covers, and

the undermost row of the upper wing-covers are white; the eyes are reddish brown, the beak brownish grey, and the feet black. According to Gould, these birds are very numerous in New South Wales, where they form a most attractive feature in the fields and gardens, enlivening the landscape with their variegated plumage, and delighting the ear with their peculiar tones as they pour forth their song of greeting to the rising sun. They seem to prefer clear open country, planted with groups of trees, as their usual residence, and for this reason they are but seldom seen upon the coast. Their food consists principally of grasshoppers, which they devour in enormous quantities. The period of incubation, in accordance with the inverted seasons of the southern hemisphere, commences in August, and lasts until January, each pair breeding twice in the year: the nest is round and open, formed of twigs, and lined with some softer material. The eggs of the Flute Bird are unknown, but Gould describes those of a very similar species, which he tells us are of a dirty blueish white, often shaded with green, and marked with zig-zag brown streaks of various shades. When in confinement these birds are extremely violent and revengeful; should anything annoy them they will erect their feathers and spread their wings and tail after the fashion of a Game-cock, and are so quarrelsome that they frequently engage in furious combats with much larger birds. Some species are eminently distinguished by the flexibility of their voice, and all are capable of imitating any tunes they may happen to hear.

The BELL MAGPIES (*Strepera*) differ from the Flute Birds in the formation of their beaks, which are much longer, slenderer, and more delicately arched; the upper mandible is armed with a powerful hook at the tip, and furnished with conspicuous teeth on its margins.

THE BELL BIRD OR BELL MAGPIE.

The BELL BIRD (*Strepera graculina*) is of a beautiful blue black; the roots of the primary wing-quills, from the fourth to the eighth, the tip of the tail, and the lower tail-covers, are white, thus giving their plumage the effect of being piebald, the tail appearing entirely white, with the exception of a regular patch of black across its terminal margin; the eyes are of a beautiful yellow, the beak and legs black. In length this species does not exceed seventeen inches. The Bell Bird, like the Flute Bird, is an inhabitant of New South Wales, where it is distributed widely over the face of the country, occasionally appearing upon the coast, but preferring, at least during the breeding season, well watered valleys, abounding in trees; in such localities it also finds its principal supply of food, which consists of berries, fruits, and seeds. When either upon the ground or amongst the branches, these birds are usually seen in very small parties, and but rarely in pairs or large flocks: they live principally in trees, and, though quite at their ease upon the ground, seldom come down to disport themselves upon its surface. Their flight is quite unlike that of our Crows; when in the air their movements are extremely sweeping and majestic, but cannot be sustained for any length of time. Whilst on the wing they utter a most peculiar resounding cry, from which they derive their name. The nest is large, round, and very open, formed of twigs and lined with moss and grass. With the appearance of the three or four eggs that constitute their brood, we are entirely unacquainted. The settlers of New South Wales hunt the Bell Magpie, as they do the Flute Bird, on account of its flesh, which is regarded as a great delicacy. Very few of this species have as yet reached Europe alive.

THE BALD-HEADED CROW.

The BALD-HEADED CROW (*Picathartes gymnocephalus*) is an extremely peculiar and very rare member of this family, inhabiting Sierra Leone, and we believe entirely confined to that country,

but we cannot speak with any certainty on this point, as naturalists are still quite unacquainted with its habits. This species would seem to form a connecting link between the Ravens and the Vultures, birds between which there is usually but little similarity. The beak of the Bald-headed Crow is comparatively weak, but slightly curved, and covered at its base with a cere in place of the bristles that are generally so characteristic of the Raven tribe. The wings are powerful and rounded, the tail long and graduated, and the feet high and furnished with strong toes. The head is entirely bare, and the throat, like that of the Vulture, overspread with bristly or down-like feathers. The plumage is of a brownish grey above and white beneath; the wings and tail are reddish brown, the bare or sparingly covered neck red, the beak black, and the feet yellow. According to Gray, this bird is about fifteen inches long, the wing measures rather more than six inches, and the tail six inches and ten lines.

The TREE CROWS, or JAYS (*Garruli*), are distinguished from the Ravens by their blunt short beaks, with or without a hook at the extremity, their weak feet and very short rounded wings, long graduated tails, and rich variegated plumage, which is generally very soft and flocculent. Unlike the members of the preceding family, the various species of Jays pass the greater part of the day in flying from tree to tree in their favourite woods, seldom coming to the ground, and still more rarely congregating in large flocks. Owing to the comparative shortness of their wings, their flight is unsteady, and they are therefore incapable of attaining to any considerable height, or of hovering in or whirling through the air; still more inelegant is their mode of progression on the ground, it being nothing more than a ludicrous attempt at a hop: upon the trees, however, they are quite at their ease, and some even exhibit unusual facility in climbing. In the perfection of their senses they are in no way inferior to the family above described, but their intelligence is not nearly so great, and they must be rather considered sly than clever; indeed, in many points they resemble the Shrike, possessing all the murderous cruelty and rapacity of that bird, without any of the courage and boldness that seem to palliate the atrocities committed by Ravens. They will mercilessly destroy and plunder the nests of other birds, and eat almost any animal or vegetable food, frequently doing great damage by their raids upon orchards, fields, and gardens, thus bringing down upon themselves the vengeance of man. In their habits during the period of incubation they also differ widely from the preceding family, inasmuch as they never build associated together in large numbers, but quite apart from each other; their nests, moreover, are small, and the brood is usually composed of from five to seven eggs. When tamed, some of them are capable of imitating words, and of learning to whistle tunes, but they are extremely troublesome, owing to the numberless petty thefts and annoying tricks in which they delight.

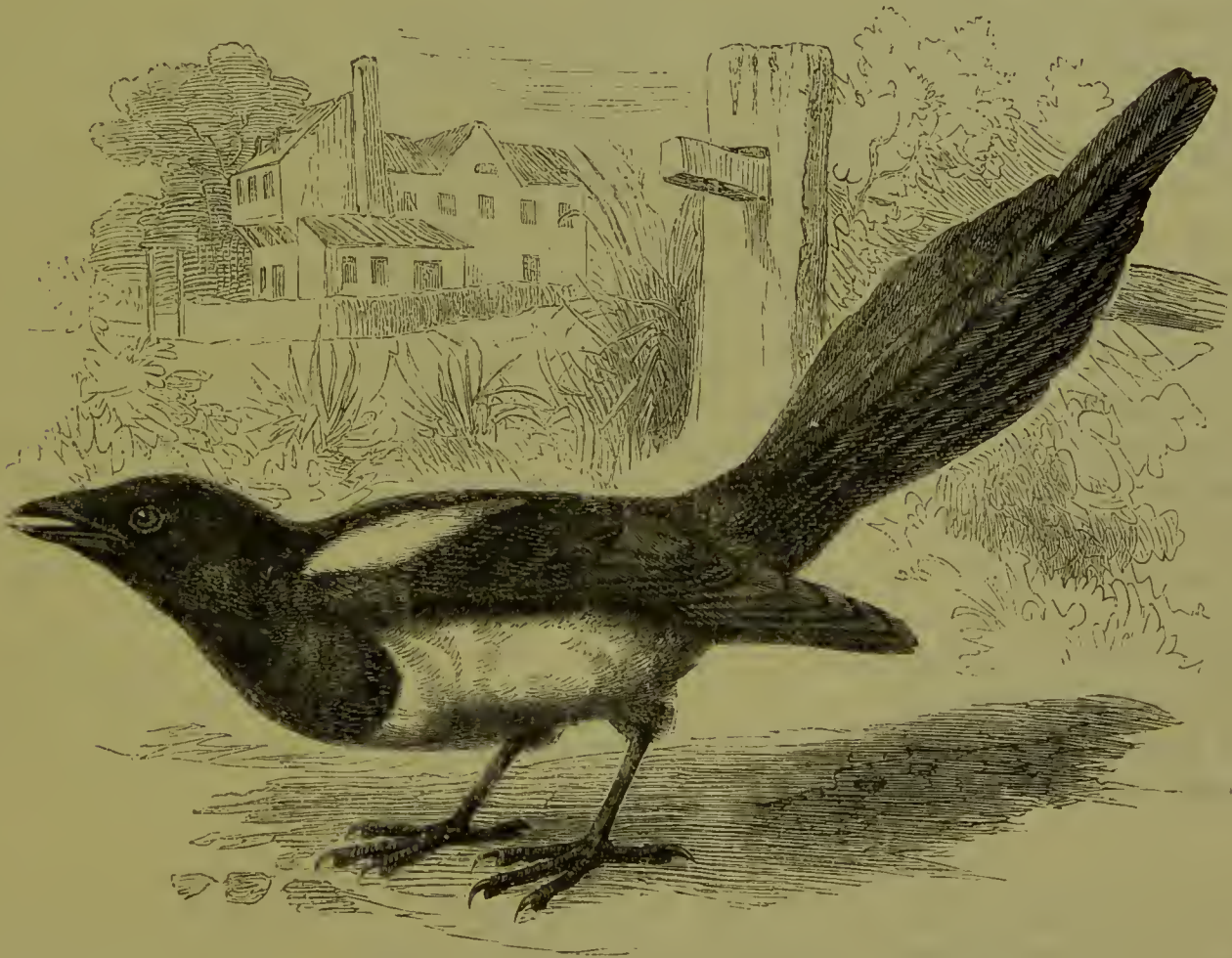
We shall divide the Tree Crows or Jays into several groups, all more or less recognisable by the following characters:—Their bodies are slender, their Raven-like beaks are as long as the head, nearly straight, and provided at the base with a cere, instead of bristly feathers; the wings are short, and their third and fourth quills longer than the rest; the tail, which is composed of twelve feathers, is either very long and wedge-shaped, or of moderate length and rounded at the extremity. The lax and soft plumage frequently becomes flowing towards the head, thus forming a kind of crest, and is usually bright in its coloration.

THE MAGPIE.

The MAGPIE (*Pica caudata*) stands first upon our list, as being familiar to us all, and also because it presents many characteristics that associate it with the family of Ravens—indeed, it might

almost be described as a Crow with a long tail, though its beak is shorter and more curved, the wings shorter and more rounded, the tarsi higher, and the plumage softer and thicker than in that bird. The lower part of the breast and the feathers upon the shoulders are white, and the rest of the coat black, with a rich and varied lustre upon its surface. The eyes are brown, the beak and feet black. This species is about one foot six inches long, its breadth one foot ten inches; the wing measures seven inches, and the tail ten inches.

The Magpie is met with throughout the whole extent of Europe, in Thibet, Northern Asia, and North Africa: in North America it is represented by a very similar bird: but the distribution of the Magpies is very unequal; some districts it seems carefully to avoid, and yet in a neighbouring



THE MAGPIE (*Pica caudata*).

province it may be found in large numbers. It seldom visits mountains, open plains, or thick forests, but usually inhabits lightly wooded parts of the country, such localities being preferred as are frequented by man, in whom it shows the utmost confidence. In Scandinavia, where it is regarded with the greatest favour, it seeks its food in farmyards or the courts that surround the houses, and builds beneath the roofs. It is always stationary, and never wanders to any great distance from its abode, except during the winter, invariably returning to its old haunts. The movements of the Magpie differ in many respects from those of the Ravens; its gait is similar, but the tail is borne aloft, to act as a kind of balance to the body of the bird; its flight is heavy, being effected by sweeping strokes of the wing, and should the wind be at all high is very unsteady—indeed, as a rule, it never flies, except when compelled to do so in going from one tree to another. As regards its intelligence, and the development of its senses, the Magpie will bear comparison with any of its kindred. In its

intercourse with man it seems easily to distinguish between friends and enemies ; towards the latter it shows itself bold, and sometimes cruel ; but in its relations with its fellows it is extremely social. Its voice is harsh and monotonous. Magpies will occasionally congregate with other species in flocks of moderate size, though they more generally live in small parties ; during the breeding season the conferences held between them are extremely amusing, and the sounds they produce much varied in expression, the assembly chattering with such noise and earnestness as to have given rise to sundry popular proverbs.

These birds live upon insects of all kinds, as well as fruit, seeds, and berries ; they do incalculable mischief in the fields, and destroy great numbers of eggs during the spring—indeed, their murderous propensities would almost bear comparison with those of the Falcon, for they will not only attack small birds, but occasionally fall upon fowls, ducklings, or pheasants so suddenly that their victims are quite unprepared to act on the defensive. In Norway it is popularly supposed that the Magpie begins its nest on Christmas Day ; with us the preparations for building are not made till the commencement of spring. The nest is placed at the summit of a tree, or in some countries, as we have said, upon the tops of houses, and is formed of twigs or dry leaves, covered with a thick layer of clay ; within this is placed a bed of delicate fibres or hair, upon which the eggs are deposited ; the structure is then protected from the attacks of an enemy by a roof of dry thorns or twigs, woven lightly together, but sufficiently strong to keep off intruders ; the entrance to the nest is effected through a hole at the side. The brood consists of seven or eight eggs of a green colour, sprinkled with brown spots. In three weeks the young are hatched, and are fed by both parents on a great variety of insects, earthworms and snails, the greatest caution being employed to avoid discovery of the nest ; and so attached are the parents to their offspring, that we have known a female continue to brood after having received a shot in her body. When taken young from the nest the Magpie becomes extremely tame, and, like others of its race, soon learns to imitate words and whistle tunes, without having been subjected to the operation of *tongue slitting*, popularly supposed to be necessary before these birds can be taught to speak ; in spite of their docility they are, however, most troublesome creatures, and tales without number might be told of the mischief they have wrought by throwing suspicion on innocent people by their thievish propensities, for they seem to delight in abstracting any bright or glittering object that attracts their attention.

THE BLUE MAGPIE.

The BLUE MAGPIE (*Cyanopica Cookii*) is frequently met with in the southern and central parts of Spain, and a very similar species (*Cyanopica cyanea*) inhabits the Crimea, a large portion of Siberia as far as the Amur river, and the whole of China. These birds have been separated from other members of the family on account of the great difference of the tints of their plumage, which is so extremely beautiful that the European species is pre-eminent among its feathered relatives ; in both the species under consideration the back is pale brownish grey, the throat and cheeks greyish white, and the wings, quills, and tail light blueish grey ; the eyes are reddish brown, and the beak and feet black. The plumage of the young birds is paler, the black upon the head and the blue of the wings being almost imperceptible ; the grey of the body is very dingy, and the wings are marked with two indistinct grey lines. The length of both species is thirteen and a half to fourteen inches, their breadth sixteen inches to sixteen and a half ; the wing measures five and a quarter, and the tail eleven inches ; the female is not quite so large as her mate.

All such districts of Southern and Central Spain as are covered with woods of oak-trees are frequented by the Blue Magpie in great numbers, but it is rarely seen in the eastern provinces, over which the oak is but sparsely scattered. These birds are also met with in North-western Africa,

living everywhere in large flocks; they sometimes settle upon the houses, and have no hesitation in constantly seeking their food amongst the refuse of the busiest streets. In most of their habits they closely resemble the Common Magpie, and when exposed to danger exhibit so much cunning in evading pursuit as to render their capture a very difficult and wearisome operation. The *voice* of the Blue Magpie is, however, quite unlike that of the member of its family with which we are all so familiar; its note is very prolonged, and when several pairs are chattering gaily to each other their tones rather resemble the lusty sounds produced by the Green Woodpecker than those of their congeners. In Spain this species does not commence its building operations until May, but in other countries is somewhat earlier in the preparations for its young; the nest, which resembles that of a Shrike, has an outer frame of dry branches, lined with blades of grass, shoots of plants, and similar materials, which are selected with great care. Many nests are built upon the same tree, a whole party taking up their residence at a short distance from each other, preferring under these circumstances their favourite elms or other lofty trees as affording the safest lodging for the young. The brood consists of from five to nine eggs: these are of a greenish yellow, mottled with indistinct patches of a deeper shade, and spotted or streaked with olive brown markings, which occasionally form a kind of wreath at the broad end.

The BLUE RAVENS (*Cyanocorax*), as they have been called, are a species of Jays which appear to form a connecting link between the Magpies and the Jackdaws. These birds inhabit South America, and are remarkable for the magnificence of their plumage; their powerful beaks are usually as long as the entire head, somewhat compressed towards the tip, slightly arched at the roof, and covered with bristles at the base; the wings, in which the fifth and sixth quills are longer than the rest, extend to the root of the long tail.

THE HOODED BLUE RAVEN.

The HOODED BLUE RAVEN (*Cyanocorax pileatus*) is about fourteen inches in length, seventeen broad, with wings six inches, and tail six and a half inches long. The forehead, bridles, and upper part of the head (the feathers of which are considerably elongated), are of a rich black, so are the sides of the neck and the entire throat; the nape, back, wings, and tail, bright blue, and the entire lower part of the body white, as are also the tips of the feathers that compose the tail; above and below the eyes is a broad, crescent-shaped spot of sky blue. Schomburghk tells us that these beautiful birds frequent high trees, and subsist upon fruit or seeds; they are very shy and restless, and are easily discovered through the constant utterance of their discordant cry. The nest, which is artistically constructed, is built at the summit of a lofty tree. The eggs, two in number, are brownish white, spotted with brown. Beyond these few facts we know nothing of the Hooded Blue Raven in its native haunts.

THE CRESTED BLUE JACKDAW.

The CRESTED BLUE JACKDAW (*Cyanocitta cristata*) is an American species, with which we are much better acquainted. The shape of this bird is slender, its beak short, strong, slightly arched, and pointed; the wings are short, their fourth and fifth quills longer than the rest; the tail long and decidedly rounded. The plumage is soft and brilliant, and the feathers upon the head prolonged into a crest. In the male the predominating colour upon the back is bright blue; the tail-feathers are surrounded by a narrow dark line, the wing-feathers are tipped with black; the ends of the secondary quills, the larger feathers of the wing-covers, and the exterior tail-feathers are white, or of a greyish-white shade; the sides of the head are pale blue; a line which commences at the back of the head and passes round the throat is black, as is also a streak between the eyes; the eye itself is greyish

brown, the beak and feet blackish brown. This species is about eleven inches long, its breadth sixteen inches, the wing five inches and a quarter, and the tail five inches.

Notwithstanding the beauty of its appearance, the Blue Jackdaw is regarded with but little favour in America, where it is found in great numbers occupying the dense woods or groups of moderately high trees. It is only migratory from the Northern States, and is elsewhere numbered among the stationary birds. Wilson calls this species the *Bird Trumpeter*, from the remarkable sound that it

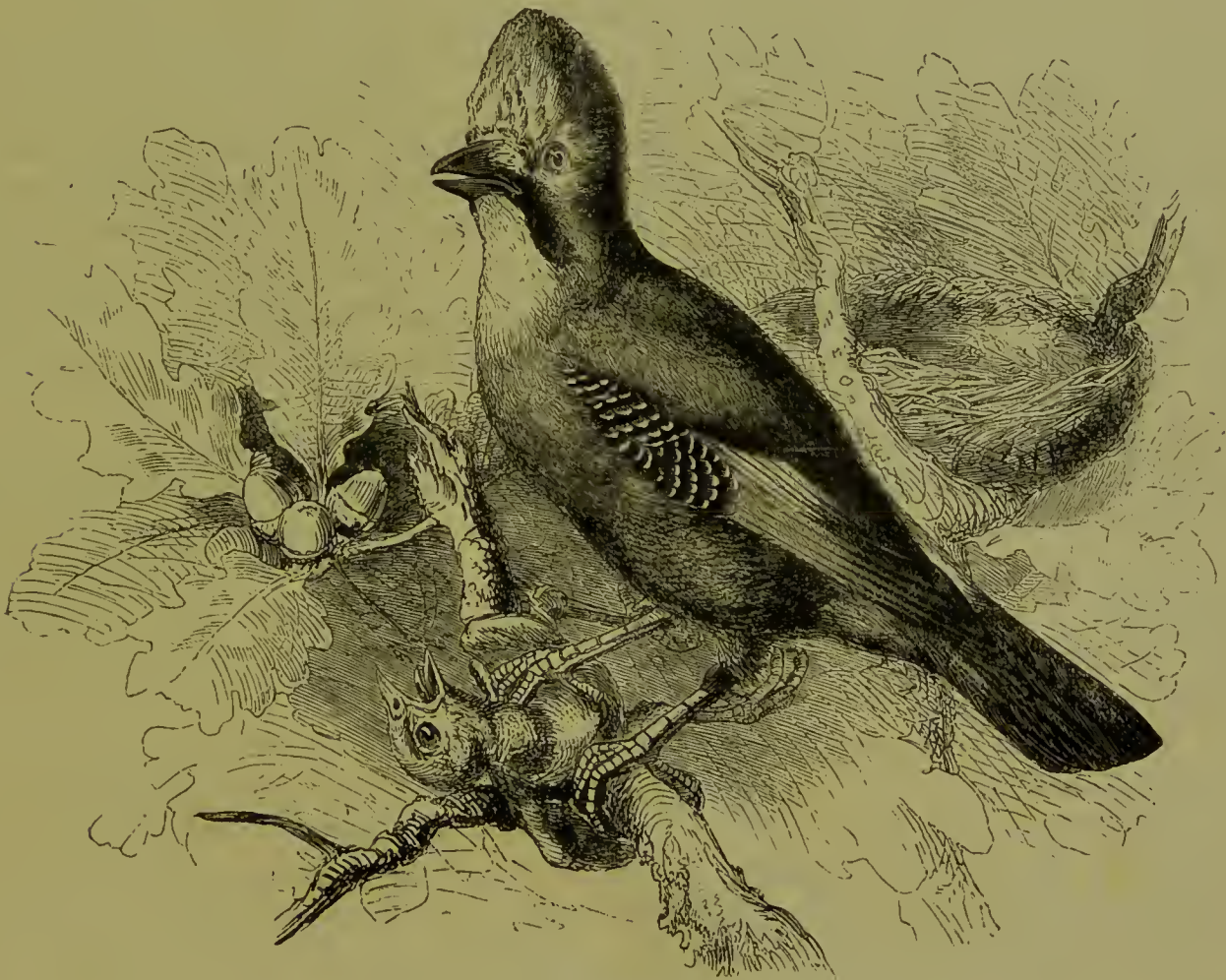


THE CRESTED BLUE JACKDAW (*Cyanocitta cristata*).

produces when alarmed ; and we learn from other writers that it can imitate the cry of the Buzzard and Sparrow Falcon to such perfection as frequently to terrify the smaller feathered denizens of the woods, and raises such an uproar on perceiving a fox or other enemy as compels the intruder to sneak quietly away. Its attacks upon the eggs and young of other birds are extremely merciless ; and, indeed, it may be regarded as a most voracious and destructive bird of prey, which devours not only small quadrupeds, but will attack very large and powerful members of the feathered tribe should they be wounded, and thus for the time incapable of resistance ; yet Audubon tells us that the Blue Jackdaw is a most arrant coward, and that it will often fly before an adversary no stronger than itself. It obtains

its prey rather by extreme craft than by open warfare, for even Thrushes and other small birds can scare it from their nests, into which, however, it often manages to steal if left unguarded only for a moment ; it will also attempt to seize young chickens, but is at once baulked of its purpose if startled by an angry cluck from the hen. Large quantities of seeds, all kinds of insects, and flesh are also eaten by these birds. During the autumn the maple, oak, and other similar trees are thickly covered by swarms of Blue Jackdaws, who not only satisfy their present wants, but carry off large quantities of seeds or acorns, storing them up as a provision for the winter, and by this means greatly assist in spreading the growth of these trees over the face of the country.

The number of broods varies with the district in which the Jackdaws are found, some breeding but once and others twice in the year ; the nest is formed of twigs and other dry materials, lined



THE COMMON JAY (*Garrulus glandarius*).

with a bed of delicate fibres, on which, in due season, four or five eggs are deposited ; these latter are olive brown, marked with dark spots. During the time that the mother is sitting the male employs every precaution to prevent the discovery of his young family ; he visits his mate with the utmost secrecy, and preserves the strictest silence while in her company. The young are fed principally upon insects. Nestlings may be easily reared in confinement, but it is never safe to trust the Blue Jackdaw in an aviary with other birds, as it is not uncommon, under these circumstances, for it to destroy its companions one after another. Audubon gives a most interesting account of an attempt he made to naturalise this species in Europe, but which unfortunately proved abortive ; the birds, about thirty in number, destined to make the experiment were placed by him in a large cage, and at first exhibited every symptom of fear, refusing the food he proffered them, and crouching in the corners

of the cage ; by the next day, however, all had regained their usual spirits, and, taking up seeds of maize in their claws, hammered at them with such hearty good will that the noise they produced sounded more like a diminutive party of smiths than the efforts of birds ; quarrels seldom occurred, and the party reached Europe in excellent health and spirits, but had not been long exposed to the change of climate before they began to be infested by numerous parasites, and only one survived to reach London. Since this attempt of the American naturalist many Blue Jackdaws have been brought to Europe, but in no instance have the efforts to naturalise them proved successful.

THE COMMON JAY.

The COMMON JAY, or OAK JACKDAW (*Garrulus glandarius*), is an European species, bearing no inconsiderable resemblance to the American bird above described, but its beak is stronger, and the tail shorter and less rounded. The plumage is silky, lax, and flowing, the feathers upon the head being prolonged into a crest. Its colour is principally greyish red or greyish brown, darker upon the back than on the lower parts of the body ; the rump is white, the throat whitish, and marked upon its upper portion by two broad black streaks, commencing on the cheeks ; the forehead is speckled with black and white ; the quills are black, with the exception of a greyish-white space upon the outer web ; the tail-feathers are black, occasionally edged with blue ; the covers over the primary quills are striped alternately with blue, black, and white, producing a very lustrous effect. The eye is light blue, the beak black, and the feet horn colour. The length of this species is about thirteen, and its breadth twenty inches ; the wing measures six and a half, and the tail five inches and three-quarters. The female is somewhat smaller than her mate.

A species closely related to this bird, but differing from it in the markings of the head, is occasionally met with in the south-eastern parts of Germany ; its actual habitat, however, is North-western Asia, and members of the group to which it belongs are found in Central and Northern Asia. The Jay inhabits all the wooded districts of Europe except its northern parts, and is also met with in Central Asia and Western Africa ; in Germany it is exceedingly common, but in England somewhat scarce. This bird frequents pine forests, woodland pastures, or leafy groves with equal impartiality, living during the summer in pairs, but at other seasons of the year flying over the country with its companions in small parties ; it seems to avoid localities where there are no oak-trees, such districts being rarely visited. The Jay is extremely restless, and though in some respects a lively and interesting bird, is so crafty as to render it at times very troublesome, not only to its feathered associates, but to man. When excited, it places itself in a succession of strange attitudes, and imitates a great variety of sounds with amusing correctness. Whilst in a tree, its movements are light and active, and its gait upon the ground by no means awkward ; but its flight is heavy, and it rarely remains for any length of time in the air, preferring to perch at short intervals upon trees or bushes, using them, however, not merely as resting-places, but as temporary shelter from the numerous feathered enemies by whom it is constantly pursued in the course of its short excursions from one wood to another. Naumann describes the dread in which many birds of prey are held by the Jays as so great, that they rarely venture to congregate in large flocks, but fly apart over the open country, living according to the advice of the old French maxim, "Chacun pour soi." The wonderful power possessed by this species of imitating the voices of other birds is noticed by many writers. Naumann heard a Jay whinny like a foal and crow like a cock ; and Rosenberg tells us that late in the autumn, when seated beneath a tree, he heard one successively imitate the voices of the Magpie, the Shrike, the Thrush, and the Starling, and that on searching the branches to obtain a sight of such unseasonable vocalists, he discovered that all these various sounds were produced by a Jay, perched on a bough just above his head.

Of this bird it may be said, in the broadest sense of the word, that it will eat anything it is possible to obtain or vanquish; nothing, from a mouse to the smallest insect, escapes its voracity. During the autumn it often subsists for weeks together upon acorns and birch or hazel nuts, softening the former in the crop, and afterwards tearing off the shell with its beak; the latter it breaks by hammering upon them without any such preparatory process; Naumann also mentions having seen one of these birds in the act of killing a Thrush, and adds that they frequently work great destruction among young Partridges. The period of incubation commences early in the spring; the nest, which is by no means large, is placed in the branches of a tree at very various heights from the ground, and formed of dry stalks or small twigs, neatly lined with fibrous roots. The eggs, five to six in number, are laid about April; they are of a dirty white, thickly marked with greyish-brown streaks and spots, some of which form a wreath around the broadest end. Only one brood is produced during the year. The young nestlings leave the shell in about sixteen days, and are fed at first on caterpillars, larvæ, worms, and a variety of insects, but at a later period are reared upon the flesh of young birds. Falcons and Sparrowhawks are among the many enemies with which the Jay has to contend; by the former it is immediately vanquished, but with the latter it will sometimes struggle long and fiercely, the combatants not unfrequently falling to the ground, exhausted by the violence of their efforts. The Horned Owl is a still more formidable assailant, destroying many birds belonging to this species; and their nests are constantly sacked by the Tree Martin, whose approach is often greeted with the most appalling cries as the parents attempt to drive the destroyer from their young. In its intercourse with man the Jay is extremely wary, and often succeeds in exasperating the sportsman, as, while in safety itself, it derides his efforts by its cries, and at the same time warns the other denizens of the wood that danger is approaching. If taken young, these birds may be trained to utter words, but their many disagreeable propensities render them even more unfit for a life of confinement than their American congeners.

In the more northern countries of Europe where the Common Jay is not met with, we find it replaced by a species whose delicate beak, decidedly rounded tail, and dusky plumage, have caused it to be regarded as the representative of a distinct group.

THE UNLUCKY JAY.

The UNLUCKY JAY (*Perisoreus infaustus*) is about twelve inches long and eighteen broad; its wing and tail measure five and a half inches. The prevailing colour of the adults is a light reddish grey, the quills and centre tail-feathers are grey, while upon the wings and the exterior tail-feathers there are patches of reddish brown; the upper part of the head is blackish brown. Young birds are known by the comparative paleness of their tints, and the indistinct markings upon the lower portions of the body. The eyes are greyish brown, the beak and feet black.

The dense fir and pine forests of Russia and Siberia are in some places numerous inhabited by this species, which has been known to fly as far as Germany, and, though rarely, is occasionally seen in Norway and Lapland. In some respects it resembles the bird we last described, but its activity and intelligence are inferior, and its mischievous propensities by no means so conspicuous as in the Common Jay. Wilson tells us that it is so bold and inquisitive that it will perch upon the cap of the woodcutter when engaged at his work, and testifies so little fear of man as to follow flocks of reindeer to their resting-place, even when accompanied by their herdsman. Its gait upon the ground resembles that of the Jackdaw, but amongst the branches it is considerably more active in its movements. When perching upon a tree it often appears to be under no anxiety to conceal itself, and seems to trust to the inconspicuous colour of its attire as a sufficient protection from the eye of an

enemy. The flight of the Unlucky Jay is unsteady and struggling, and its cry, which is composed of two syllables, has been compared to that of a man in distress; Schröder speaks of it as being not unlike that of the Shrike, composed of various hoarse notes, mingled with sounds resembling the mewling of a cat. Nuts, berries, seeds, acorns, and insects of all kinds are eagerly sought after by these birds; they will climb amongst the fir and pine trees like Titmice, to obtain the contents of the cones, in very much the same manner as that practised by the Crossbills, and as winter approaches will lay up a goodly store of these provisions; but their hoards are frequently plundered by squirrels or woodpeckers who have managed to discover the secret of their hiding-place.

This species commences its building operations in March: a nest which we obtained was a large structure, formed externally of twigs, moss, grass, and strips of pine branches; the interior was lined with an extremely thick layer of hair and Ptarmigan feathers. The eggs are usually from five to seven in number, of a greenish white, thickly covered with irregular dingy spots of greenish grey or olive green. The attachment of these birds to their young is extreme; should a sportsman approach their nest, the parent will fly down, and hobble along the ground as though lame, in order to draw his attention from the little family, and should it succeed in luring him to a safe distance from the spot, will rise suddenly into the air, and return by a circuitous flight to the place from whence it came.

When a flock of these birds is discovered, their capture is accomplished with little difficulty, for they will never desert each other in a moment of danger, so that should one member of the party be taken the rest become an easy prey. The Unlucky Jays are commonly to be met with throughout the whole of the fur districts in North America, where they may be seen hovering about the encampments of the trappers during the whole season. According to the account of Captain Blackiston, their capture is sometimes accomplished in the following manner:—A man lays himself flat down, either in a boat or upon the ground, draws a cloth over his head and shoulders, stretches out his hand, in which he holds a scrap of dry meat, and quietly awaits the result; his purpose is soon accomplished, for down come the birds to attack the meat, when, just as they are about to give the first peck at the tempting morsel, the treacherous hand seizes upon them with an irresistible grasp.

The LONG-TAILED CROWS (*Glaucoptes*) are distinguished by their powerful and moderately long beak, which is broad at the base and compressed towards the tip. The upper mandible is slightly arched, hooked at its extremity, and covered at the base with short velvety feathers. The wings are short, their fifth quill longer than the rest; the tail is long and graduated, the feet strong, and the tarsus longer than the middle toe. The coloration of the plumage is brilliant. Like the Jackdaws, these birds almost exclusively frequent thick forests, and closely resemble the foregoing groups in their habits; the few facts we give below apply equally to them and the following species.

The TREE MAGPIES (*Dendrocitta*) constitute a group of Jays inhabiting India. They are large birds, with short, compressed, and very decidedly arched beaks; short, abruptly rounded wings, of which the fifth and sixth quills are longer than the others; wedge-shaped, elongated tails, the two centre feathers extending far beyond the rest; and with tolerably strong or short feet. So entirely are these Tree Magpies to be regarded as Indian, that not more than one or two of the five species mentioned by Jerdon are met with in neighbouring countries. We select for description the KOTRI of the Hindoos (*Dendrocitta rufa*), or, as we shall call it,

THE WANDERING MAGPIE.

The WANDERING MAGPIE (*Dendrocitta vagabunda*) is about sixteen inches in length, ten inches of which are included in the tail; the wing measures six inches. The entire head, nape, and

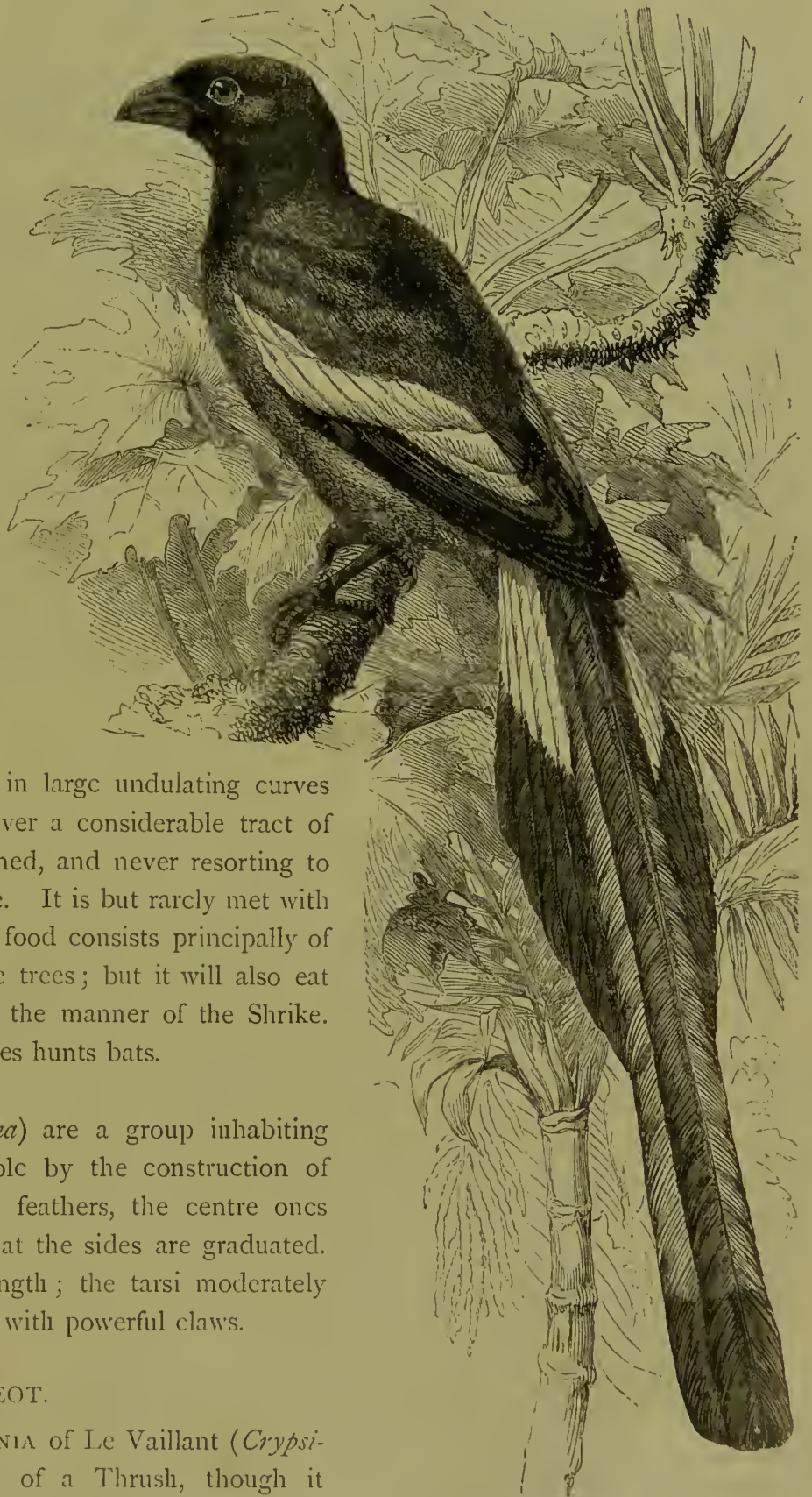
breast are reddish brown or blackish brown, the tints being deeper upon the fore part of the head, chin, and breast, and from thence changing into a greyish shade. The feathers upon the shoulders, back, and tail-coverts are deep red; the wing-coverts and the exterior web of the secondary quills are light grey, almost white; the rest of the quills are black. The tail is deep grey, and all its feathers tipped with black; the lower part of the breast is red or reddish yellow, the beak black, the feet deep slate colour, and the eyes blood red.

The Kotri is met with throughout the whole of India, and is especially numerous in the wooded plains of Assam, China, and Cashmere. In the more northern parts it is seen in every group of trees and every garden, generally living in the immediate vicinity of villages; it appears to pass the day in flying in large undulating curves from tree to tree, or in roaming over a considerable tract of country, resting where it feels inclined, and never resorting to any particular spot for that purpose. It is but rarely met with in parties, but lives in pairs. Its food consists principally of fruit, or the insects found upon the trees; but it will also eat young birds, destroying them after the manner of the Shrike. Buckland tells us that another species hunts bats.

The BENTEOTS (*Crypsirhina*) are a group inhabiting Java. These birds are recognisable by the construction of their tail, which is formed of ten feathers, the centre ones being extremely long, whilst those at the sides are graduated. The beak is strong, of medium length; the tarsi moderately long, but weak; the toes are armed with powerful claws.

THE BENTEOT.

The BENTEOT of Japan, or TENIA of Le Vaillant (*Crypsirhina varians*), is about the size of a Thrush, though it appears much larger, owing to the extent of the long tail. Its soft plumage is principally of a jet black, and gleams with a green or purple sheen; only the forehead, bristles, and throat are pale black, and entirely without lustre; the quills are black, the four centre tail-feathers green, as are also the outer webs of the



THE WANDERING MAGPIE
(*Dendrocitta vagabunda*).

exterior feathers ; the inner webs are of a dull black, the beak and feet are black. Horsfield tells us that this bird is by no means rare in Java, but frequents such very retired spots as to be but seldom met with ; it avoids the inhabited parts of the country, and only appears occasionally upon the borders of its favourite thickets, to which it retreats at the first approach of danger. Its flight is unsteady and awkward, and its gait upon the ground equally clumsy. It lives principally upon insects of every description, and its powerful claws would seem to indicate that it can also plunder the nests of its feathered associates. Fruit has been found in the crop of this species.

A very similar group, TEMNURUS, is distinguished from that just described by the shape of the tail-feathers, the ends of which present the appearance of having been cut off at a right angle. The SAW-TAIL (*Temnurus truncatus*), inhabiting Cochin China, is the most perfect representative of this section. Its plumage is of an uniform black, and its length about fourteen inches.

The KITTAS (*Cissa*) are met with in Southern and Eastern Asia. They bear so great a resemblance to the Jays in their mode of life and general deportment, that we have no hesitation in assigning to them a place here, instead of following in the steps of some naturalists who class them with the Thrushes. The Kittas are a race of extremely beautiful birds, elegant in form and brilliant in plumage ; their beaks are thick, strong, and almost as long as the head, curving from the base, and bent upwards towards the tip ; the feet are large and strong, the toes powerful and of medium length, with formidable claws ; the wings are round, their fourth and fifth quills being longer than the rest ; the tail is either short and rounded or very long and graduated ; in the latter case the central feathers extend far beyond those at the sides.

THE LONG-TAILED KITTA.

The LONG-TAILED KITTA (*Urocissa Sinensis*) is about twenty-six inches in length, seventeen to eighteen inches of this measurement belonging to the tail ; the wing measures eight inches. The plumage is very splendid, the entire head, throat, and breast being deep black, shading into blue, with the exception of a white streak which passes over the head and nape ; the mantle and upper tail-coverts are of a light cobalt blue, the latter tipped with a broad patch of black ; the wings are of the same blue tint, the inner web of the quills being black, and all the feathers tipped with white ; the tail is principally blue, but its centre feathers are white, and the rest tipped with white and black ; the under side of the bird is whitish, shaded with a reddish grey.

The Long-tailed Kitta is met with in the western parts of the Himalaya, and is replaced by a very similar species in the eastern provinces. Swinhoe tells us that it also inhabits the forests around Hong Kong in great numbers. In India it is found living at an altitude of 6,000 feet above the level of the sea, occasionally perching in the brushwood, but spending the greater portion of its life upon the ground, from which it obtains its principal food. In its habits it is so observant and intelligent as to be extremely useful to its feathered brethren, by warning them of the approach of an enemy ; indeed, it is said that it will sometimes follow the leopard for miles, and thus prevent it from quietly stealing upon its prey. During its flight, which resembles that of the Magpie, the tail is kept in an horizontal position, but when perched it is held erect, and constantly waved as the bird utters its sharp and chattering cry. The Long-tailed Kitta builds amongst the branches of trees, at various heights from the ground, and forms its nest of twigs woven loosely together and lined with different kinds of vegetable fibre. The brood consists of from three to five eggs of a pale greenish grey, thickly strewn with brown spots, which form a kind of wreath at the broad end. Many of these birds have been brought alive to England, and in India they are occasionally kept tame in a cage.

The FEATHER-BEAKS (*Cissa*) are recognisable by their powerful bills, which are of medium size, slightly arched, and compressed at the sides; the wings are rounded, and the tail but slightly graduated.

THE SIRGANG.

The SIRGANG of Bengal, or GREEN JACKDAW, as it is called by the Anglo-Indians (*Cissa Sinensis*), is a bird about fifteen and a half inches long, of which eight and a half belong to the tail; the wing measures six inches. The coat of this species is also remarkable for its beauty; the predominating colour is a delicate chrysophrase green, shading here and there into blue or blueish green, and changing into yellow upon the head; the black bridles are prolonged to the nape, where they unite, thus forming a kind of ring. The quills and wing-covers are of a beautiful deep red, shaded with brown (those of the old birds are greenish brown); the secondary quills are pale blueish green, with a broad border of black; the tail-feathers are white, those at the side are black, tipped with white. The feathers upon the head are elongated into a crest. The Sirgang is met with throughout the south-eastern districts of the Himalaya, with the exception of Assam, Silhet, and Tenasserim; in Sikim it is often found living at an elevation of 12,000 feet. Jerdon tells us that it wanders from tree to tree in search of delicate leaves or insects, and that it also eats grasshoppers. We learn from other sources that it will fall upon and destroy small animals after the manner of the Shrikes, and is as expert as a Falcon in pursuit of its prey. The voice of the Green Jackdaw is loud, and, compared with that of some of its congeners, not unpleasing. When caged it soon becomes tame, and is attractive in its habits.

THE PLANTAIN EATERS.

THE PLANTAIN EATERS (*Amphibolæ*) constitute a family of very remarkably constructed species, whose habitat is confined exclusively to Africa. Few members of the feathered tribe have given rise to so much difference of opinion as has been occasioned by the desire to assign to these birds their proper place. We have followed the classification adopted by Reichenbach, and shall introduce them here as presenting many characteristics in common with the Jackdaw. To avoid confusion, we have subdivided this very varied group into sub-families or sections.

The TRUE PLANTAIN EATERS (*Musophagæ*) range from the size of a Raven to that of a Jackdaw. Their body is elongated, the neck short, the head of moderate size; the upper mandible is very decidedly curved, slightly over-lapping the lower portion, and either indented or furnished at its sides with tooth-like appendages; the wings are of moderate length, and rounded, their fourth and fifth quills being longer than the rest; the tail is rather long and rounded, the tarsi strong and comparatively high. The foot is not constructed after the scansorial type—three of the toes being placed in front and one behind; it is true that they can move the exterior toes slightly backwards, but never so far as to pair with the one behind, except when under the hands of the bird-stuffer. The plumage is soft, in some species almost downy, and occasionally very brilliant in its hues.

The Plantain Eaters inhabit the dense and extensive forests of Central and Southern Africa, but are never found in the treeless districts of that continent; their habits are social, and they usually live in small parties, seldom consisting of more than fifteen birds. Some species pass the day in flying noisily about, whilst others spend their time in climbing with great activity amongst the trees, or in searching for food upon the ground. The flight of these birds is light and easy, their short wings enabling them to turn in the air with great facility; they are not very remarkable for intelligence,

but in some respects exhibit considerable foresight and prudence, and though extremely timid in their intercourse with man, associate freely with their feathered brethren. They feed principally upon leaves, buds, fruit, berries, and corn, and for this reason they usually inhabit such localities as are well watered and rich in various kinds of trees. We are unacquainted with any particulars of their incubation, except that the nest is usually built in the hollow trunk of a tree, that the eggs are white, and that the young remain for a considerable time under the care of their parents.

THE BANANA EATER.

The BANANA EATER (*Musophaga violacea*) is met with in the forests of Agra, upon the Gold Coast, and is replaced by a very similar bird in Western Africa. This species is distinct from its congeners

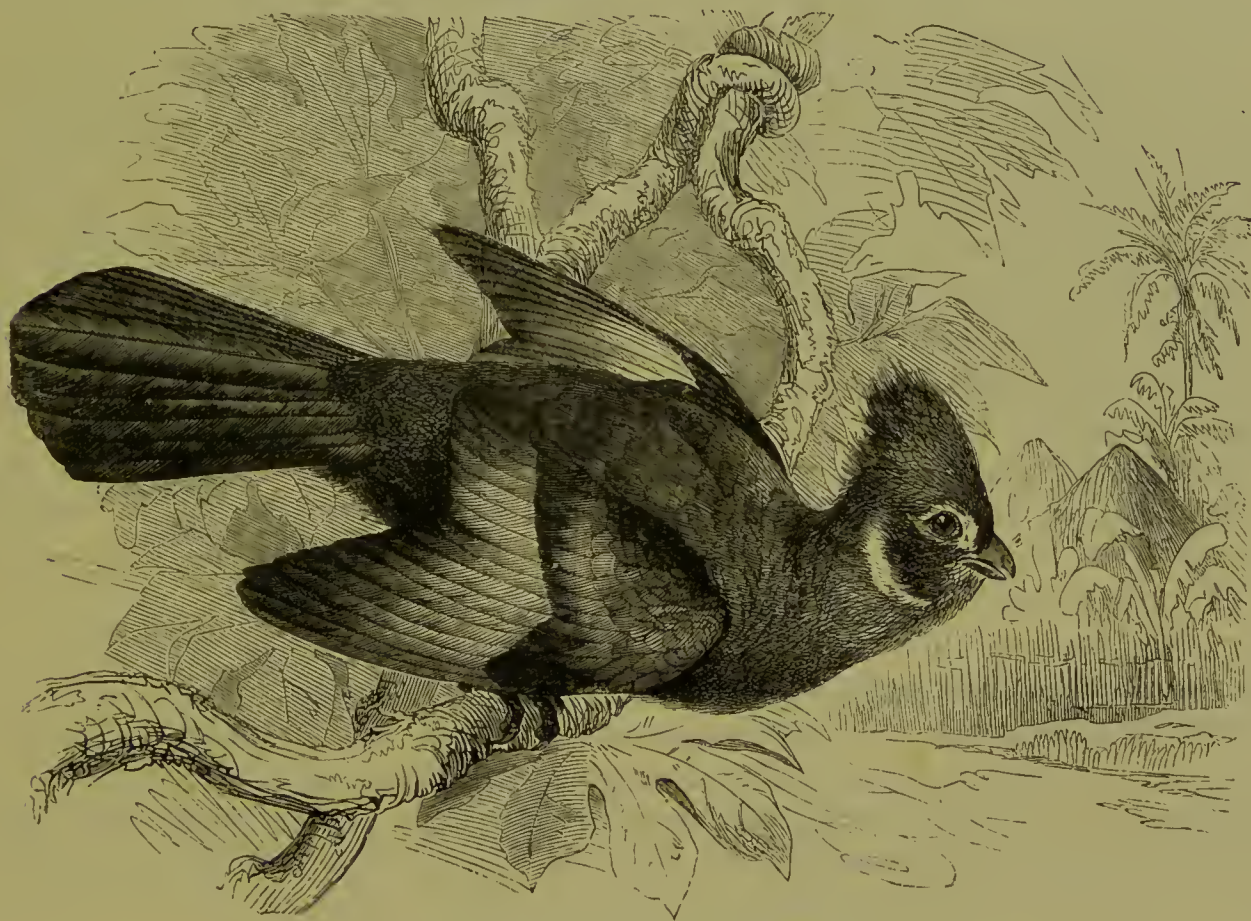


THE BANANA EATER (*Musophaga violacea*).

by the peculiar formation of its beak, the upper mandible being covered for a considerable extent by a horny plate, which is also spread over a large portion of the forehead; the beak itself is very powerful, and arched broadly from the brow to the tip, where it terminates in a slight hook, projecting over the somewhat feeble inferior mandible; the edges of the bill are indented, and the nostrils are situated in the fore part of the upper beak. The bridles and a patch around the eyes are quite bare; the wings are of medium length, their secondary quills longer than the primaries; the tail is comparatively short, broad and rounded at its extremity; the feet are short but powerful. Swainson speaks in glowing terms of the beauty of this species—he regards it as truly a king among birds, and describes its plumage as being principally of a rich, lustrous, purple black, the splendour of which is enhanced by the contrast presented by its magnificent bright red wings; the beak is also very striking in appearance, being of a bright yellow, shading into brilliant red. The soft and delicate feathers which cover the top of the head resemble brilliant red velvet; the rest of the plumage is

deep violet, and shines with a beautiful green light when seen in the rays of the sun ; the quills are red, tipped with violet, and shaded with lilac ; the bare places round the eyes are also red, and are thrown into strong relief by a dazzling white streak, which passes beneath them ; the feet are black, the eyes brown. The young are without the small red velvety feathers upon the top of the head, but in other respects their plumage resembles that of the old birds. The length of this species is about twenty inches, the wings and tail measure eight inches and a half.

We are acquainted with but few particulars concerning the Banana Eater, which, until the last few years, has been numbered amongst the greatest rarities of our collections ; but we learn from travellers that it inhabits the western coast from Senegambia to Lower Guinea, living in pairs, and passing nearly the whole of its life in the same locality ; its movements, habits, voice, and food, seem to differ but slightly from those of its congeners with which we are more familiar.



THE WHITE-CHEEKED HELMET BIRD (*Corythaix leucotis*).

We are much better informed as to the habits of

The HELMET BIRDS (*Corythaix*). These elegant and brilliantly-coloured birds are slenderly formed, with rounded wings, of which the fifth quill is longer than the rest. The tail is of medium size, the beak short and triangular, furnished with a slight hook at the extremity of the upper mandible ; the nostrils are partially covered by the feathers on the brow, the plumage is rich ; upon the head the feathers are prolonged so as to form a kind of helmet composed of green feathers. The wings are of an uniform purplish red, and the eyes surrounded by a bare flesh-coloured ring. All the various members of this group are remarkably alike, both in their appearance and mode of life.

THE WHITE-CHEEKED HELMET BIRD.

The WHITE-CHEEKED HELMET BIRD (*Corythaix leucotis*) is an inhabitant of Abyssinia ; the colour of this species is for the most part green : the beak and wings are deep greenish violet, the tail is

blackish violet, marked with dark coloured undulating lines; the belly and legs are deep grey. The helmet is dark green; a spot in front of the light brown eyes, and a streak which passes from the ear to the fore part of the throat are pure white; the wings are of a magnificent bright red, and bordered with yellowish green. The eye is surrounded by a ring of small reddish brown warts; the upper mandible is green, as far as the nostrils, and blood-red at its tip; the feet are brownish grey. The length of this species is about seventeen inches, its breadth twenty-one inches and a half; its wing measures six inches and three-quarters, and the tail eight inches and a quarter; the female is somewhat smaller than her mate, but does not differ from him in other respects. The Helmet Bird is found either at a considerable altitude in the mountains, or frequenting well-watered and thickly-wooded valleys, where it passes the greatest part of its life in flying from one tree to another in small flocks, only coming to the ground for a few moments at a time when in want of food, and immediately returning to seek shelter in the branches. When occupied in this manner the movements of this species resemble those of the Jackdaw, for the whole party does not alight at the same time, but steal down one by one, preserving the strictest silence, and after following exactly in the steps of their leader, return to the sycamore or tamarind tree that has been selected as a general rendezvous; here they assemble regularly both at night and during the mid-day heat, and when thus congregated at the summits of the branches, present a spectacle of such brilliancy and beauty as cannot fail to excite the admiration of all who see them. They hop and fly with the greatest liveliness and activity from bough to bough, and, apparently, are by no means desirous of eluding observation. Their flight is undulating, and effected by a series of violent strokes until the desired height is attained; the bird then spreads its wings as though to display itself to the utmost advantage, and sinks slowly towards the ground before again rising and continuing its course. During these evolutions the neck is outstretched, the head elevated, and the tail alternately opened and closed. The voice of the Helmet Bird is very peculiar, and has somewhat the effect of ventriloquism, often misleading the listener as to the position of the owner. We found both berries and seeds in the crops of some specimens that we killed, and observed that they were always most numerous in localities where the former abounded; we also procured a pure white egg from the ovary of the female Helmet Bird, which was not unlike the egg of a domestic pigeon, both in size and shape, but distinguishable from it by the superior delicacy and polish of the shell; the nest we could never discover, but believe it to be built in the trunk of a tree. These birds are so extremely shy and restless, as to render their capture a work of great difficulty, if the sportsman should not succeed in taking them unawares whilst disporting themselves in the crowns of their favourite trees. Verreaux mentions a very curious fact connected with this species, namely, that the magnificent purple of the tail-feathers entirely loses its beauty when exposed to moisture, and that the colour may be rubbed off with the fingers when wet; but as soon as the plumage is dry it recovers its full brilliancy of tint. A strange illustration of this peculiarity was afforded in the case of a Helmet Bird in the Amsterdam Zoological Gardens, which, having been seized with cramp, was drenched with cold water; some hours afterwards the creature died, and it was then discovered that the wing upon which it lay was still wet, and had changed from red to blue, while the upper wing had dried before death ensued, and had therefore regained its full gorgeousness of hue.

THE TURAKO.

The TURAKO (*Corythacola cristata*) may be regarded as the giant of this family. It is a very remarkable species, resembling the Helmet Birds in some respects, but differing from them in others so decidedly as to cause it to be regarded by some as the type of a distinct group. These birds are remarkable for the great size of their limbs, and also present marked peculiarities in the formation of the beak, and in the crests with which their heads are adorned. Their body is powerfully constructed,

the wings of moderate size, and rather pointed, the fifth quill being longer than the rest, the fourth and sixth, however, almost equalling it in length; the tail consists of ten broad rounded feathers, slightly graduated at the sides; the tarsi are short and strong, the toes long, and armed with thick claws; the beak is powerful, and decidedly arched, somewhat rounded at the roof, and indented at its edges. The crest is formed by elongation of the feathers upon the brow and top of the head, the region of the eyes and bridles are also covered with feathers. The plumage is thick and soft, and upon the under part of the body slightly downy. In size this species will bear comparison with the Raven. Its length is about two feet two inches, the wing measures one foot, and the tail one foot and one or two inches. A bright green or Turkish blue usually predominates in the coloration of the feathers; those which form the crest are, on the contrary, black, tipped with dark blue; the breast and fore part of the belly are yellowish green, the rest of the under portion of the bird pale reddish brown, the tail greenish blue, tipped with bright blue, and marked with a broad streak of black towards its extremity. The beak is yellow, lighter in shade towards its base; the feet are of a leaden hue. The male and female resemble each other, but the young are without the crest, and have the throat bare; the beak and upper part of the head are black, and the whole coat much paler than in the adults.

The habitat of the Turako is confined to Western Africa, where it exclusively frequents such tracts as are well watered and thickly planted with trees, living in the same manner as the Helmet Birds, and rarely flying for any length of time, owing to the great difficulty it has in sustaining its heavy body, or rising to any great height in the air. Juicy fruits, such as figs or bananas, constitute its favourite food, but it will also eat grasshoppers and a variety of insects, and is said to do great mischief in plantations by the quantities that it devours. The Turako is constantly on the alert against danger, and on the slightest alarm raises its crest, which is usually laid flat, elevates its head, and turns about with every symptom of fear, previous to seeking safety in some other locality, where it conceals itself from pursuit with so much skill as to render its capture a work of difficulty, in spite of the observation it attracts by its loud, hoarse cry.

The second division of the Plantain Eaters constitutes a distinct group, called the

SPLIT-BEAKS (*Schizorhis*), also inhabitants of Western and Central Africa, distinguishable from the species already described by their elongated bodies and comparatively long wings, in which the fourth quill is longer than the rest, and also by the construction of their beaks, which are strong, and nearly as thick as they are broad; the upper mandible is very decidedly curved, and but slightly indented at its edges. The plumage of this group is dusky, and the crest upon the head of a peculiar shape.

THE ALARM BIRD.

The ALARM BIRD (*Schizorhis zomurus*) measures about one foot seven inches and a half in length, and two feet four inches in breadth; the wings and tail measure nine inches and a half. The female is larger than her mate, but resembles him in other respects. In these birds the upper part of the body is of an uniform brown, and the lower portion light grey from the breast downwards. The elongated feathers which form the plume are bordered with white, those of the back, so far as they are visible, blueish grey; the quills are blackish brown, and all except the first marked upon their inner web with large, square white spots. The centre tail-feathers are light brown; the four exterior ones are brown at the tip, and from thence upwards white, broadly striped with brownish black at their roots. The eyes are greyish brown, the beak greenish yellow; the feet are dark grey.

This species appears to be spread over a considerable portion of the African continent, and travellers mention having seen it in Abyssinia, about the Blue River, and at the source of the White

Nile. The cry of the Alarm Bird so closely resembles the voice of the monkey, that even experienced sportsmen are deluded into the belief that they are in the vicinity of a party of baboons, and find, to their astonishment, that the loud and peculiar noise is produced by some of these strange birds, as they sit perched together in pairs or parties on the branches of a neighbouring tree. When about to utter this cry the birds sit bolt upright upon the topmost boughs, and after agitating their tails give forth a sound that penetrates far and wide amidst the surrounding woods. Their habits are shy and cautious; they testify considerable anxiety at the approach of man, except when accustomed to his immediate vicinity, and rarely leave their refuge amongst the trees, except in the morning and evening, in search of the berries that constitute their principal food.



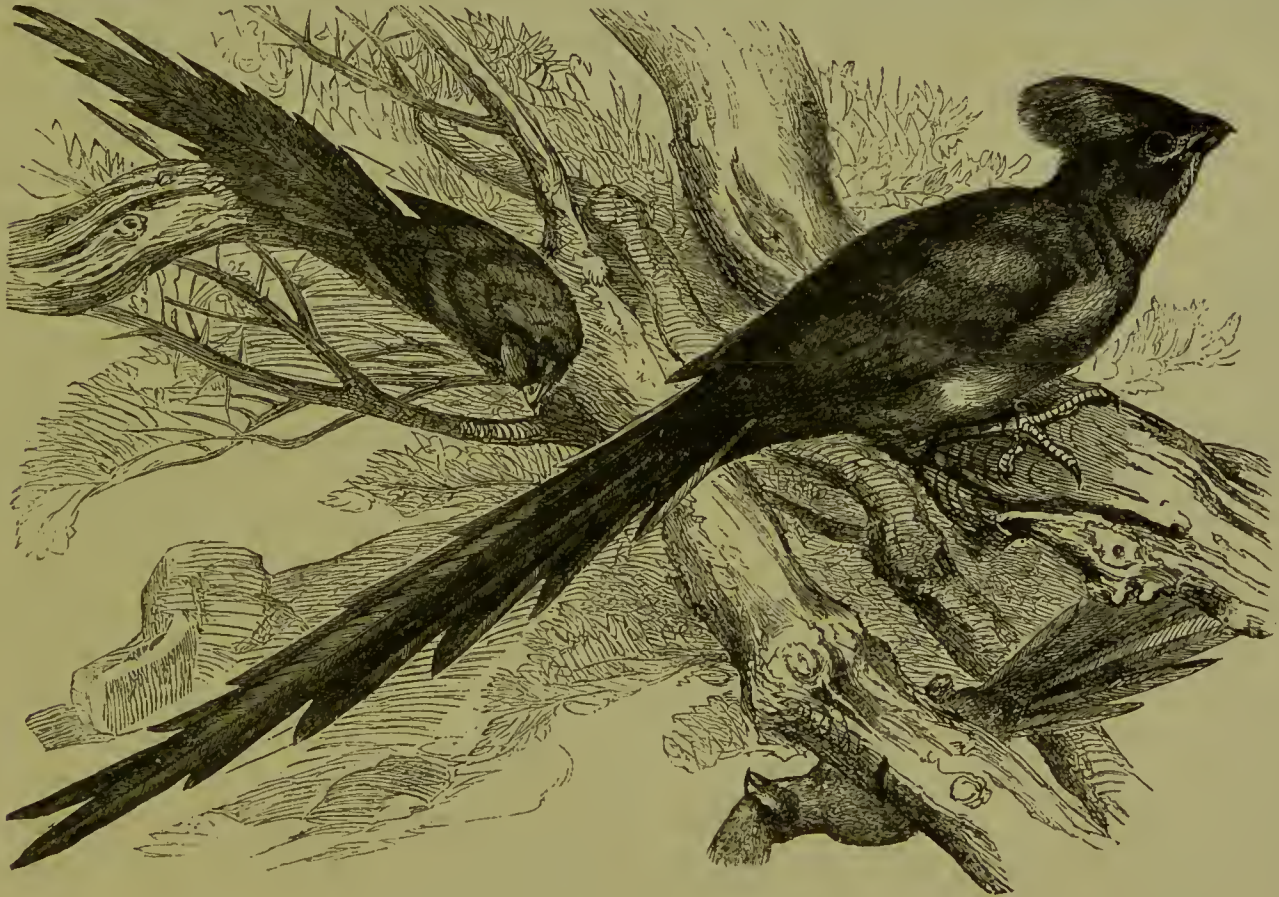
THE ALARM BIRD (*Schizorhis zonurus*).

The COLIES, or MOUSE BIRDS (*Colii*) bear a close resemblance to the Plantain Eaters, but are distinguished from them by the following striking peculiarities. All the species belonging to this group are much alike in appearance; their bodies are rather muscular, and nearly cylindrical in shape, the tail almost twice as long as the body, the wings short and almost rounded, the tarsi short, and toes long; the beak is short, thick, curved from its base downwards, and compressed at its tip; the upper mandible is furnished with a slight hook. The distinguishing characteristics of these birds consist in the construction of the foot, which has four toes all placed in front, but those at the exterior are capable of being turned either to the side or back of the foot; and, secondly, in the peculiarity of the plumage, which is so fine as to resemble the hair upon the back of a small quadruped; the long feathers which compose the tail are, on the contrary, particularly stiff, each of them having a very powerful shaft and webs of remarkable strength; the centre tail-feathers are at

least four times as long as those at the sides ; the wings are short and decidedly rounded, the fourth, fifth, and sixth quills being longer than the rest. The appellation of Mouse Birds has been given to this group on account of the mouse-like grey that predominates in their plumage, varied occasionally with a reddish or dark grey shade.

THE WIRIWA, AND WHITE-CHEEKED MOUSE BIRD.

The WIRIWA (*Colius Senegalensis*) and the WHITE-CHEEKED MOUSE BIRD (*Colius leucotis*) are both inhabitants of Africa. In the first the brow is grey, and adorned with a tuft of brownish-grey hair-like feathers ; the back of the head and sides of the neck are reddish yellow, the remaining upper



THE WIRIWA (*Colius Senegalensis*).

part of the body blueish grey, the throat light grey, the immediate front of the throat and breast greyish blue, clouded with grey ; the belly is reddish brown, the beak red at its base and black at the tip ; the feet are bright red, as is a bare ring around the brown eye. The plumage of the White-cheeked species is mouse grey ; the lower portion of the body is yellowish grey, the throat dark grey, the brow blackish grey, the cheeks greyish yellow. The webs of the tail-feathers are broader than in those of the Wiriwa. The eye is light blue, the upper mandible of a blueish shade, the lower mandible reddish horn colour, and the feet bright red. Both species are alike in size, being about thirteen or thirteen and a half inches long, and from eleven to eleven and a half broad ; the wing measures three inches and three-quarters, and the tail about nine inches. These remarkable birds are found exclusively in Central and Southern Africa, though the northern parts of that continent seem equally rich in their favourite trees. Some species appear to inhabit a very limited tract, whilst the range of others extends from the western to the eastern coast, and from sixteen degrees south latitude to the Cape of Good Hope : all frequent well wooded districts, and are as numerous in the fertile steppes as in the primitive forests. Le Vaillant was the first to give any detailed account of the

remarkable habits of this group, and so many reliable naturalists have substantiated his statements that we cannot hesitate to give them a place here, though our own observations have not always furnished the same results.

The Mouse Birds, according to the writer we have just mentioned, generally live in small families, numbering about six individuals, and usually select a densely foliated tree or thick mass of bushes as their gathering place. Only those who have visited Africa, and thus become acquainted with the remarkable characteristics of its luxuriant vegetation, can realise the actual appearance of the haunts thus selected as cities of refuge by these most strange and *mouse-like* creatures. Our readers must, therefore, try to picture to themselves a gigantic tree, with dense and usually thorny foliage, so interwoven with and embedded in the huge parasitical plants that grow around it as to be nearly concealed from view. In this green mass, which is impenetrable to man and beast, and even impervious to the attacks of the sportsman, the Mouse Birds make their home, creeping, like the animals whose name they bear, through such tiny and invisible crevices as to lead the spectator to imagine that they have actually vanished from his sight, when suddenly a little head appears, and the bird makes its exit through the hole by which it entered. How they manage to creep in and out of such small apertures seems quite inexplicable; Le Vaillant describes their motion whilst accomplishing this curious performance as being extraordinarily rapid. Their flight is performed with wings and tail outspread; whilst in the air the whole party constantly utter their shrill cry, which is accompanied by a very peculiar chirping sound; they but seldom rise to any great height when on the wing, and still more rarely settle upon the ground. Le Vaillant tells us that the Mouse Birds pass the night hanging in clumps upon the branches, like bees upon a hive while swarming. Perreaux, who verifies this statement, mentions having seen them clinging to each other whilst asleep, the first bird holding on to the branch with one foot, while it supports a second bird by entwining one of its legs with its own free limb; this second bird, in like manner, supporting a third, until they form a chain that often contains as many as six or seven of these living links. We ourselves have never succeeded in observing either of these curious habits, but have seen them during their sleep not only with both feet upon the branch, but lying full length upon it with the breast downwards. Whilst climbing among the foliage they will often hang like Titmice from the under part of a twig, but never retain this position for more than a very short time. The Colies are far from shy, and are easily captured if it has once been possible to penetrate their fastnesses—indeed, so little timidity do they exhibit that we have seen them caught with the hand.

Their food appears to be limited to vegetable diet, for we have never found insects in their crops, or, indeed, any substances except buds, fruit, or corn. The fruit of the plant called "Christ's Thorn" affords them their principal subsistence, but they will also devour grapes, limes, and cactus figs, getting at them after the manner of the Titmouse, by climbing over their surface. In Central Africa we heard no complaint of the mischief done to the gardens by the Mouse Birds, but in the Cape of Good Hope, owing to the large numbers in which they occur, the inhabitants regard them as formidable enemies. Nets or similar precautions are perfectly useless to prevent their incursions if they have cast their eyes upon a tempting-looking tree, for, if there be an aperture however small, their lithe, elastic bodies can penetrate it with the utmost ease. The nests, which are described as being of a conical shape, and formed of roots of various kinds, cotton-wool, grass, and leaves, are placed close together upon the most inaccessible branches. The brood consists of from six to seven eggs. Large numbers of the Mouse Birds are shot in the Cape, not only on account of the mischief they do, but for the sake of their juicy flesh.

CATCHERS (*Captantes*).

UNDER this head we class not only those members of the feathered race to which has been assigned, *par excellence*, the name of BIRDS OF PREY, but include with them such families of Swallows and song birds as obtain the principal part of their food by the destruction of animal life. We are fully aware of the difficulties presented by this attempt at a simple and natural classification, which, like many similar efforts, must necessarily be very imperfect, and open to grave objection; but we have adopted it as rendering the general view of our subject more intelligible to the tyro in Ornithology.

All the very various groups we have thus combined under the general name of CATCHERS are endowed with powerful bodies and comparatively long wings, and, moreover, are remarkable for the velocity and grace of their movements through the air. Their beaks are short, hooked, and frequently rendered more formidable by the possession of a tooth-like appendage to the upper mandible, which fits into a corresponding cavity in the lower portion of the beak; their gape is always large, and often of such great extent as to appear out of proportion to the rest of the body; the crop is but slightly developed or is entirely wanting, and the gizzard a mere capacious bag, provided with strong muscular walls. In all other characteristics presented by the members of this very heterogeneous order so much dissimilarity is observable, that to avoid confusion we must confine ourselves to describing each group in its appointed place.

The CATCHERS are met with in all parts of the world, but it is only in the warmer climates that they are found in great numbers, or seem to exhibit the full development of their matchless powers, which are alike displayed amid the recesses of the forest or on the heights of mountain ranges; even the inhabitants of the water are not secure against their treacherous rapacity. Some groups carry on the work of destruction during the day, some prefer the evening for their excursions, while others only commence their murderous onslaughts when night has fully closed in, and given them the protection of its sheltering darkness. All have but one mate, and breed once or twice in the year. Their nests are often built with great skill, and usually placed in holes of trees, in crevices of walls and rocks, or, in some instances, upon the ground. The eggs vary from one to eight in number, and the young are tended with great affection by both parents.

BIRDS OF PREY (*Raptores*).

THE numerous species included in this group present a remarkable inequality of size, some vying with the largest members of the feathered race in the majestic development of their powerful bodies, whilst others are no bigger than a Lark; still, despite this difference, there is such an unmistakable impress upon their forms and plumage as renders it easy to distinguish a Bird of Prey at the first glance. All the members of this rapacious series are endowed with a powerful and compact frame, broad breasts, and strong limbs; the head is usually round, occasionally elongated, the neck short and muscular, the trunk robust, and the legs and wings exhibit such unmistakable strength in their formation as can leave no doubt as to the attributes of the bird even should it be seen deprived of its feathers, beak, and claws. The beak is short, decidedly curved, hooked at its extremity, and covered with a cere at the base of the upper mandible; the latter is

immovable, and somewhat compressed at its sides. The margins of the beak are not only very sharp, but are frequently rendered more terrible by the presence of a tooth-like projection from the upper mandible, which fits into a corresponding excavation in the lower jaw. In such species as are without this tooth-shaped appendage the margins of the upper mandible are waved and trenchant, distinctly indicating their carnivorous propensities. The feet are massive and strong, the toes long in proportion to the size of the tarsi, and very motile; both legs and feet are covered with scale-like plates, and the toes furnished with claws or talons, which are either curved and sharp or comparatively straight, but in both cases rounded above and channelled beneath in such a manner that the lower part of each claw presents two distinct sharp margins. The plumage is generally soft, and formed of large feathers, which are either thick, small, and firm, or broad, soft, and silky, or even woolly in their texture. The bridles, a place between the base of the beak and the eye, and the eye itself are frequently entirely naked, whilst, on the contrary, some members of this group are distinguished by a circle of radiating feathers surrounding the orbit. The quills that form the wings and tail are always of considerable size, and their number in most species is pretty nearly the same—that is to say, ten primaries, and at least twelve or at most sixteen secondaries, form the wings; the tail is composed almost invariably of twelve quills, which appear placed, as it were, in pairs. In some races the feathers cover not only the tarsi, but even the toes, where they are distinguished by the name of *hose*, a term that will be frequently employed in our descriptions of the birds with which we are about to deal. The plumage of the *Raptores* is usually dingy and sombre in its hues, though some few species exhibit considerable beauty of appearance, and the bare places on the head, the comb, wattles, bridles, cere, beak, feet, and eyes are occasionally brightly coloured. The internal construction of these birds is on a par with their external configuration; the skeleton is strong, and the sternum so large as to extend over the whole of the fore part of the breast; the keel is high, the bones of the wings comparatively long, and those of the legs powerfully developed. The bones of the entire skeleton are for the most part without marrow, and thus admit of the entrance of air, received from the large lungs and air-cells which extend throughout the body. The gullet is very dilatable, and is usually enlarged into a crop.

As we have said in our introductory chapter, the sight of the *Raptores* is very acute, and their eye adapts itself with remarkable facility to varying distances; and if any of our readers have tried the experiment of holding their hands alternately close to and at some distance from the eye of a Falcon, they have no doubt been astonished at witnessing the extraordinary dilations and contractions of which the pupil is capable. In some species the sense of hearing is also good, and we shall shortly have fully to describe the high degree of excellence observable in the structure of the ear of an Owl; their sense of smell, on the contrary, is by no means keen, and that of touch scarcely more acute or reliable. All Birds of Prey are remarkable for great courage, and exhibit such cruelty, rapacity, and cunning as cannot fail to render them terrible foes to all creatures weaker than themselves. In their relations to each other, on the contrary, the different species exhibit great affection; they combine readily in the defence of their companions, and do battle for them with the utmost devotion. To what perfection the intelligence of the Birds of Prey has been brought will be seen in our description of some of the services rendered to our forefathers by the Falcons. As regards their voices, few species are capable of uttering more than two or three harsh and unpleasing notes.

All parts of the world afford everything that is necessary to the existence of these predatory races; they are as much at their ease upon beds of ice such as environ Greenland or Spitzbergen as upon the glowing sands of an African desert; they sweep over continents, and exhibit the utmost indifference whether they alight upon the gigantic trees of a primitive forest or upon the steeples of a densely populated city. As winter approaches, such of these winged freebooters as inhabit northern regions wander south, returning in the spring to their native haunts, each bird



Accipiter velox (Linn.)

SPARROW HAWK — *Accipiter velox*

(Linn.)

with its mate, and at once commence preparations for the reception of the single brood produced by the pair during the whole year. The eyrie, as the nest of a Bird of Prey is called, is usually situated in hollow trees, cavities in old walls, on lofty rocks, or among the most inaccessible branches of the forest, in some cases, though rarely, upon the ground; or they make a platform of boughs, upon which the eggs are deposited. When built upon trees or rocks these eyries are usually very firm and massive in their construction, the walls increasing in height and strength from year to year, as their occupants add to and repair them at the commencement of each season; the interior, however, is never deep, the bed for the young being gradually raised with the rest of the fabric. Large sticks are employed by some Eagles to form the outwork of the eyrie; Tschudi tells us that the Stone Eagle obtains the branches it requires by falling suddenly upon them with closed wings, and thus, by the weight of its body, breaking them from the trunk to which they belong; the branch is then carried off in its talons to the place where the nest is to be built. Such Birds of Prey as build in holes trouble themselves but little about the accommodation of their brood, and lay their eggs without any preparation upon the naked stone, or at the bottom of the cavity they have selected. During the time that these bold and daring birds are occupied in the choice of a mate terrible battles are of frequent occurrence, the spirited antagonists confronting each other on the wing, and fighting till one of them is compelled to quit the field, the combat being often renewed day after day for whole weeks together, until the weaker rival is fairly vanquished, and driven from the locality; the females never appear to mingle in the strife, and are treated throughout the breeding season with the utmost attention and tenderness by their victorious spouses. The eggs, which are from one to seven in number, are rough shelled, and either pure white, grey, or yellow, marked with spots and streaks of a darker shade. In general only the female broods, but she is relieved occasionally by the male bird, who is by no means behind the mother in attachment to the young, and will sometimes perish in endeavouring to ward off danger from his progeny. The nestlings are at first fed upon food half digested in the crop of their parents, and afterwards upon scraps of flesh. The preparation of the nutriment intended for the young usually devolves upon the mother, but both parents combine in watching over the safety of the little flock long after they are fully fledged.

All Birds of Prey procure their principal sustenance by murderous and incessant attacks upon the creatures that surround them; and, besides flesh, many will devour insects, eggs, worms, snails, garbage of all kinds, and, in some rare instances, fruit; they consume great quantities of food, but are also capable of fasting during a considerable period. Their digestive powers are such as to enable them to reduce bones and sinews to a pap; the feathers and hair of their prey are rolled into a ball, and from time to time ejected from the mouth. Perhaps few prejudices are more unjust than the ill-will and enmity with which men usually regard these voracious and daring races, whose destructive propensities are much more frequently employed in their service than in the injury of their property; the Secretary Vulture destroys the Cobra di Capello by crushing its head, whilst other species clear the streets of Africa and Southern Asia of a mass of filth and refuse which, if left to accumulate, would fill the air with poison and disseminate everywhere the seeds of death.

The Raptores divide themselves naturally into three distinct and important groups, gradually connected by a great variety of species, which combine and blend, as it were, the particular characteristics of the more typical members of the order. These three groups are—

The FALCONS, the VULTURES, and the OWLS. We have no hesitation in assigning to the Falcons the first place, both on account of their intelligence and the development of their corporeal attributes; but it is not so easy to decide between the merits of the Vultures and the Owls, as their

claims upon our notice are very equal. We, however, regard the Vultures as the more highly gifted birds, and have, therefore, given them the second place upon our list.

The FALCONS (*Falconidæ*) are distinguished by their powerful, slender, and compact bodies, heads of medium size, and short necks. Their wings are large, usually pointed, but occasionally rounded at the extremity; the tail and feet are very various, both as regards formation and strength; the beak is short, and covered at its base with a cere, which is never concealed from view by feathers; the upper mandible is always hooked, and sometimes furnished with tooth-like projections. In some species the plumage covers not merely the entire body, but extends over the legs and feet, even to the toes; the feathers are sometimes short and coarse, and sometimes soft and silky in texture, but always very abundant. The eyes are bright and of moderate size, the crop is protuberant, but never globose. All the Falcons obtain their food by rapine, and may be regarded as the most daring and courageous of the feathered tribes.

The NOBLE FALCONS (*Falcones*) are in every respect the most perfectly organised members of the group to which they belong; both as regards their strength and skill, and the perfection in which they display the characteristics peculiar to their race, they stand supreme. In these noble birds, as they are justly called, the body is very compact, the head moderate, the neck short, the wings long and pointed, the second and occasionally the third quill being longer than the rest. The beak is short but powerful, very decidedly arched at its base, hooked at the extremity, and furnished near its apex with a more or less highly developed *tooth*; the lower mandible is sharp at its edge, and has a hollow in which the tooth of the upper mandible can lodge. The talons of these Falcons are proportionately larger and more formidable than those of any other Bird of Prey; the leg is strong and muscular, and the tarsus short, the middle toe almost equalling it in length. The plumage is thick and harsh, the quills and tail-feathers of great strength. The region of the eye is bare, so as not to interfere with the scope of vision, presenting a naked ring, which is a distinguishing characteristic of the Noble Falcons. The plumage is usually of a light blueish grey above, whilst whitish grey, reddish yellow, or white predominate on the lower parts of the body; the cheeks are often curiously marked by a black streak, which has been called a *beard*. The males resemble the females in the coloration of their feathers, but are somewhat smaller. The young do not acquire the plumage of their parents until they are two or three years old.

Many of these birds migrate during the winter months, and spend a great portion of their time in flying over the face of the country, sweeping along with astonishing strength and rapidity, and rushing down upon their prey with a velocity that renders it impossible for the eye to follow their movements. Considerable variety is observable in the manner in which the flight of the different races of Falcons is accomplished, some moving slowly and with a hovering motion through the realms of air, others sustaining themselves for a considerable time in one spot by means of a gentle and tremulous agitation of the wings. The Noble Falcons, on the contrary, fly with quick short strokes, and an occasional gliding movement, sometimes soaring to an incredible height, and performing most varied and beautiful evolutions, more especially when they are endeavouring to attract the admiration of their mates; at other times they do not usually rise to more than 400 feet above the earth. When perching, the body, owing to the shortness of the feet, is of necessity held erect, but is kept in a horizontal position when walking on the ground, an act which they accomplish in the most awkward manner, endeavouring to render their progress more easy by a constant balancing of the wings. Early morning and evening are preferred by these Falcons for the pursuit of their prey, which they almost always capture whilst in flight, the booty being carried off to some retired spot, where they can devour it

undisturbed and at leisure. Some species consume large quantities of insects, but no true Falcon in its free state will eat carrion. The process of digestion is accomplished during a light sleep into which these birds usually fall when satiated, and during which they sit perched upon some tree with streaming and disordered plumage. During the summer they live in pairs, and will allow no intruder to approach the spot where they have selected their building place, but at other seasons they occasionally associate with their congeners and form large flocks, which remain together for weeks and months at a time; towards Eagles or Owls, on the contrary, they exhibit the utmost enmity, and many are the sturdy combats that ensue should the rival marauders encroach upon each other's hunting grounds.

The eyrie of the Noble Falcons is usually very carelessly constructed, and, indeed, some of them will not take the trouble to make even ordinary preparation for their young, but seize upon the nests of some of the larger species of Ravens; whilst such as do build for themselves are content with almost any situation, and merely collect a rough heap of sticks in the holes of trees, rocks, old walls, or even on the ground, the only care for the comfort of the young family consisting in the arrangement of a slight bed of some fibrous material, upon which the brood is laid. The eggs, from three to seven in number, vary considerably in their appearance, but are for the most part round, rough-shelled, and of a pale reddish brown, marked with small spots and large patches of a darker shade. The female alone sits upon the nest, and is meanwhile tended with much assiduity by her mate, who endeavours to enliven her during the performance of her monotonous duty by every means in his power. The young receive the utmost care and attention from both parents, even after they have left the nest, and are instructed and defended from danger with most unwearied devotion.

Perhaps few creatures are so destructive to game and poultry as these Falcons, and yet for centuries they were regarded with distinguished favour by man, who had learnt how to subdue them to his service. So long ago as 400 years before Christ we hear of their being employed in the chase, and in the sixth century the passion for falconry had attained to such an extravagant excess that it was openly reprobated and forbidden in the churches; but even after this the barons, it is said, maintained their right to place their Falcons on the altar during the hours of Divine service. So violent was the rage for this pursuit in England that Edward III. commanded that those who killed a Falcon should be punished with death, and condemned to imprisonment for a year and a day whoever should take one of their nests. To such a high value had they risen in 1396 that the Duke of Nevers and many other noble captives were liberated by Bajazet on the payment of twelve white Falcons, sent to him by the Duke of Burgundy as their ransom. Francis I. kept no fewer than 300 of these valuable birds, which were reared under the care of an officer, who had fifteen noblemen and fifty falconers to assist him in his duties. In England hawking was performed on horseback or on foot—on horseback when in the fields and open country, and on foot when in the woods and coverts. In following the Hawk on foot it was usual for the sportsman to have a stout pole with him to assist him in leaping over little rivulets and ditches; this we learn from an historical fact related by Hall, who informs us that Henry VIII. pursuing his Hawk on foot at Hitchin, in Hertfordshire, attempted, with the assistance of his pole, to jump over a ditch that was half full of muddy water, the pole broke, and the king fell with his head into the mud, where he would have been stifled had not a footman leaped into the ditch and released His Majesty from his perilous situation. When the Hawk was not flying at her game, she was usually *hoodwinked* with a *cap* or hood provided for that purpose and fitted to her head, and this hood was worn abroad as well as at home. All Hawks taken upon "*the fist*," the term used for carrying them upon the hand, had strips of leather, called *jesses*, put about their legs, and the jesses were made sufficiently long for the knots to appear between the middle and little fingers of the hand that held them, so that the *lunes*, or small thongs of leather, might be fastened to them with two *tyrrits*, or

rings, and the lunes were then loosely wound round the little finger. Lastly, their legs were adorned with bells fastened with rings of leather—each leg having one—the leathers to which the bells were attached were denominated *bewits*, and to the bewits was added the *creance*, or long string, by which, in tutoring, the bird was drawn back after she had been permitted to fly, a proceeding which was called the reclaiming of the Hawk. The bewits, we are informed, were for the purpose of keeping the Hawk from “winding when she bated,” that is, when she fluttered her wings to fly after her game. Respecting the bells, it is particularly recommended that they should not be too heavy to impede the flight of the bird, and that they should be of equal weight, sonorous, shrill, and musical, not both of one sound, but the one a semitone below the other. The person who carried the Hawk was also provided with gloves for the purpose of preventing its talons from hurting his hands. In the inventories of apparel belonging to Henry VIII. such articles frequently occur; at Hampton Court, in the jewel house, were “seven Hawks’ gloves embroidered.”

Old books on hawking assign to different ranks of persons the sort of Hawks proper to be used by each, and they are enumerated in the following order:—

“The Eagle, the Vulture, and the Merloun— for an <i>Emperor</i> .	The Lanere and the Laneret—for an <i>Esquire</i> .
The Ger-faulcon, and the Tercel of the Ger- faulcon—for a <i>King</i> .	The Marlyon—for a <i>Lady</i> .
The Faulcon of the Rock—for a <i>Duke</i> .	The Hobby—for a <i>Young Man</i> .
The Faulcon Peregrine—for an <i>Earl</i> .	The Goshawk—for a <i>Yeoman</i> .
The Bastard—for a <i>Baron</i> .	The Tercel—for a <i>Poor Man</i> .
The Sacre and the Sacret—for a <i>Knight</i> .	The Sparrow Hawk—for a <i>Priest</i> .
	The Musket—for a <i>Holy Water Clerk</i> .
	The Kestrel—for a <i>Knave</i> or <i>Servant</i> .”

The above list is interesting, as it may be presumed to contain the names applied to the greater part, if not all, of the birds used in hawking.

As in hunting, so in hawking the sportsmen had their peculiar expressions, and the uninitiated may read with advantage the terms employed to designate assemblages of various kinds of birds. Thus we read of a *sege* of Herons or of Bitterns, a *herd* of Swans, of Cranes, and of Curlews, a *dopping* of Sheldrakes, a *spring* of Teals, a *covert* of Coots, a *gaggle* of Geese, a *badelynge* of Ducks, a *sord* or *sute* of Mallards, a *muster* of Peacocks, a *nye* of Pheasants, a *bevy* of Quails, a *covey* of Partridges, a *congregation* of Plovers, a *flight* of Doves, a *dole* of Turtles, a *walk* of Snipes, a *fall* of Woodcocks, a *brood* of Chickens, a *building* of Rooks, a *murmuration* of Starlings, an *exaltation* of Larks, a *flight* of Swallows, a *watch* of Nightingales, and a *charm* of Goldfinches.”

It will thus be seen that many technical expressions once employed in Falconry are still in common use.

The Mews at Charing Cross, Westminster, were so called from the word *Mew*, which, in Falconers’ language was the name of the place wherein Hawks were kept at the moulting time, when they cast their feathers: the king’s Hawks were kept at this place as early as 1377, at the beginning of the reign of Richard II., but A.D. 1537, the 27th of Henry VIII., it was converted into stables for that monarch’s horses, and even up to the present time the word Mews is employed to designate the London stables.

In Central Asia the use of these birds for hunting purposes appears to have been carried on with truly Eastern pomp and profusion, for Marco Polo, who wrote about the year 1290, tells us that when Kublai Khan quitted Hambul he took with him no fewer than 10,000 falconers, who were sent out in parties of from 200 to 300 men to hunt over different parts of the country, and were commanded to send all the game they obtained to their master.

On these occasions the Khan rode upon an elephant, and was followed by 10,000 men, who stood in an enormous circle round him, ready to catch the Falcons and bring them back to their owners. Twelve of the finest birds were appropriated to the Sultan, and these, as well as those belonging to the principal nobles, were distinguished by a silver plate fastened to the leg, on which



ORIENTAL FALCONRY.

the name of their owner was written, whilst the Falcons belonging to inferior members of the suite were without the badge, and were handed over to the care of an officer appointed for their especial protection. Tavernier, who resided in Persia for many years in the seventeenth century, tells us that the King of Persia had 800 Falcons, of which some were taught to hunt wild boars, wild asses,

antelopes, and foxes, and others trained to go in pursuit of Cranes, Herons, Geese, and Partridges; Chardin, another eastern traveller, informs us that the Persians trained them to fly at the heads of very large quadrupeds, or even men, and blind them. It would appear that this mode of hunting with Falcons is still practised in many provinces of Asia, and Sir John Malcolm, in his "Sketches of Persia," describes the sport of hawking as seen by him when at Abasheher on the Persian Gulf:—

"The huntsmen repair to a large plain, or rather desert, near the sea-side; they have Hawks and greyhounds; the Hawks are carried in the usual manner, on the hand of the huntsman; the dogs led in a leash by the horseman, generally the same who carries the Hawk. When an antelope is seen, they endeavour to get as near as possible, but the animal, the moment it observes them, goes off at a rate that seems swifter than the wind; the horsemen are instantly at full speed, having slipped the dogs. If it is a single deer, they at the same time fly the Hawks, but if a herd, they wait till the dogs have fixed on a particular antelope. The Hawks, skimming along near the ground, soon reach the deer, at whose head they pounce in succession, and sometimes with a violence that knocks it over; at all events they confuse the animal so much as to stop its speed in such a degree that the dogs can come up, and in an instant men, horses, dogs, and Hawks, surround the unfortunate deer, against which their united efforts have been combined. The part of the chase that surprised me most was the extraordinary combination of the Hawks and the dogs, which throughout seemed to look to each other for aid; this, I was told, was the result of long and skilful training. The Hawks used in this sport are of a species I have never seen in any other country; the breed, which is called 'Cherkh,' is not large, but of great beauty and symmetry.

"The novelty of these amusements interested me, and I was pleased on accompanying a party to a village, about twenty miles from Abasheher, to see a species of hawking, peculiar, I believe, to the sandy plains of Persia, on which the Hubara, a noble species of Bustard is found on almost bare plains, where it has no shelter but a small shrub, called 'yeetuck.' When we met in quest of them we were a party of about twenty, all well mounted. Two kinds of Hawks are necessary for this sport; the first, the Cherkh (the same which is flown at the antelope) attacks them on the ground, but will not follow them on the wing; for this reason, the Bhyree, a Hawk well known in India, is flown at them the moment the Hubara rises. As we rode along in an extended line, the men who carried the Cherkhs every now and then unhooded and held them up, that they might look over the plain, and the first Hubara we found afforded us a proof of the astonishing quickness of sight of one of the Hawks. She fluttered to be loose, and the man who held her gave a whoop as he threw her off his hand, and then set off at full speed; we all did the same. At first we only saw our Hawk skimming over the plain, but soon perceived, at the distance of more than a mile, the beautiful speckled Hubara, with his head erect and wings outspread, running forward to meet his adversary; the Cherkh made several unsuccessful pounces, which were either evaded or repelled by the beak or wings of the Hubara, which at last found an opportunity of rising, when a Bhyree was instantly flown, and the whole party were again at full gallop; we had a flight of more than a mile, when the Hubara alighted, and was killed by another Cherkh, who attacked him on the ground. We killed several others, but were not always successful, having seen our Hawks twice completely beaten during the two days that we followed this fine sport."

According to Jerdon, the Bedouins of the Sahara capture large numbers of Peregrine Falcons, and sell them to men who train them to pursue Bustards, Storks, Ibises, and various quadrupeds. The Heron alone, of all birds, seems capable of resisting these terrible assailants, and will sometimes defend itself so courageously with its beak as to drive off the enemy, should the latter not have sufficient experience to seize the Heron by the nape of the neck. In England the pursuit of the

Heron by means of Falcons was practised until very recently, and Sir John Sebright gives the following account of Heron hawking as practised at Didlington in Norfolk :—

“ This heronry is situated on a river, with an open country on every side of it. The Herons go out in the morning to rivers and ponds, at a very considerable distance, in search of food, and return to the heronry towards the evening. It is at this time that the falconers place themselves in the open country, down wind of the heronry, so that when the Herons are intercepted on their return home, they are obliged to fly against the wind to gain their retreat. When a Heron passes, a *cast* (a couple) of Hawks is let go. The Heron disgorges his food when he finds that he is pursued, and endeavours to keep above the Hawks by rising in the air. The Hawks fly in a spiral direction to get above the Heron, and thus the three birds frequently appear to be flying in different directions. The first Hawk makes his stoop as soon as he gets above the Heron, who evades it by a shift, and thus gives the second Hawk time to get up and stoop in his turn. In what is termed a good flight this is frequently repeated, and the three birds often mount to a great height in the air. When one of the Hawks seizes his prey, the other soon *binds to him*, as it is termed, and, buoyant from the motion of their wings, the three descend together to the ground, with but little velocity. The falconer must lose no time in getting hold of the Heron's neck when he is on the ground, to prevent him from injuring the Hawks ; it is then, and not when he is in the air, that he will use his beak in his defence.”

The SCHAHIN, or ROYAL FALCON (*Falco peregrinator*), is highly prized by the Hindoos, who catch large numbers annually. When in pursuit of game, this latter species is not loosened from the huntsman's hand, but is permitted to soar aloft in freedom until its prey is roused, when it swoops down upon it with unerring aim.

The HUNTING FALCONS (*Hierofalco*), the most prized of the Falcon family, inhabit the more northern portions of the globe, and are at once recognisable by their very large bodies, strong and decidedly curved beaks, long tails, and the fact that the feet are only partially covered with feathers ; in other respects they closely resemble other Noble Falcons. We have divided these birds into three groups, which we shall call respectively the HUNTING, the POLAR, and the GIER FALCONS. The two former of these sections bear a close resemblance to each other as to plumage, and the young of all three are so much alike as almost to baffle even the eye of a practised naturalist. The plumage of the HUNTING FALCON (*Hierofalco candicans*) is white, marked with longitudinal dark streaks, whilst that of the POLAR FALCON (*Hierofalco Arcticus*) is white, with irregular dark blotches ; as both species advance in years, these dark marks gradually fade, and the plumage becomes a most pure and beautiful white. In the young birds the back is greyish brown or deep grey, with very distinct streaks and spots ; the feathers upon the top of the head have black shafts, and vary considerably in their shade ; the wings and tail are broadly striped, and the lower parts of the body are fawn colour ; the brown eye is surrounded by a bare greenish yellow ring. In the old birds the feet are pale yellow, the beak yellowish blue, becoming darker towards the tip, and the cere yellow ; the feet of the young are blue. The plumage of the Gier Falcon (spelt also *Ger*, *Jer*, and *Gyr*), on the contrary, is deep greyish blue, striped with black upon the upper part of the body ; the tail is light greyish blue, striped with a deeper shade ; the quills are brownish black, the breast and belly are grey or yellowish white, marked with long dark streaks, varied upon the sides and hose by irregular spots. The coat of the young is dark brown above, and of a light greyish yellow beneath, streaked with a deeper shade. Nestlings of this species are scarcely distinguishable from Peregrine Falcons of similar age. All these three groups of HUNTING FALCONS are nearly of the same size ; the females being about one foot eleven inches in length, and four feet in breadth ; the tail measures about nine inches, and the wing fifteen inches.

The Hunting Falcon and the Polar Falcon both inhabit Greenland and Iceland; the Gier Falcon, on the contrary, is met with in the most northerly parts of Scandinavia, Russia, and Siberia, and, according to our own observations, is the only species of Hunting Falcon found in Lapland. We must speak collectively of the habits of these three groups, concerning whose respective peculiarities we are almost entirely without information. All appear to prefer such rocky localities as are in the immediate neighbourhood of the sea coast, and upon which hundreds and thousands of sea birds settle during the breeding season; nevertheless, they do not entirely avoid the wooded parts of the country, for such amongst them as are too young to pair make long excursions inland, even occasionally visiting the mountain ranges of the interior, amongst which the old birds are rarely or never seen. The attachment of these various species to their breeding places is very remarkable; they return to them with such unfailing regularity that we were once accurately directed where to look for an eyrie, even though our informant had neither seen the spot nor heard it spoken of for many years; in their other habits they closely resemble the Peregrine Falcon.

During the summer months they subsist upon sea birds, in the winter upon Ptarmigans, and, according to some naturalists, will devour hares, and live upon squirrels for whole months together. We were on one occasion for three days in the vicinity of the Nyken (two mountains much frequented by sea birds), and watched a pair of Gier Falcons come down morning after morning punctually at ten o'clock, in order to obtain their breakfast. This was very speedily accomplished; both took a rapid survey of the feathered swarm they were about to attack, and then, swooping down with unerring aim, carried off one bird after another until they had obtained the necessary supply. Holwell mentions having seen a Polar Falcon pounce upon two Sea Gulls at the same time, and bear them away in triumph one in each foot; they are also said to destroy Pigeons. At the close of the breeding season the Hunting Falcons often come down from their retirement and approach the dwellings of man, towards whom they exhibit but little fear. When winter approaches they follow the Ptarmigans to their retreats amongst the mountains, and so great is the dread in which the latter holds their cruel and insatiable enemy, that they will frequently endeavour to bury themselves in the snow, if safety by flight seems to be hopeless. When in pursuit of the squirrel their ordinary mode of attack would, of course, be impossible, as the creature is protected by the sheltering trees; the Hunting Falcons, therefore, at once change their tactics, and display a patience and cunning in watching for and stealing upon their victims that strikingly contrasts with their ordinary precipitate and open butchery.

According to Faber, the True Hunting Falcon builds its large flat eyrie amid the fastnesses of some inaccessible rock in the immediate vicinity of the ocean, whilst the Gier Falcon prefers to avoid all the labour of preparation by taking violent possession of the nest of some large Crow. The eggs of the Polar Falcon are laid about June or July, those of the Gier Falcon, according to Nardoi, are usually laid as early as April, though we have found them in the month of July. The colour and size of the eggs is very varied, but those of the Polar Falcon are largest, and have the roughest shell.

Some centuries ago a Danish vessel called the *Falcon Ship* was sent every year to bring these birds from Iceland, and live Falcons are still exported every year to Copenhagen. Large numbers are killed in Iceland and Greenland on account of the mischief they do, but in the north of Asia they are still reared and trained for the chase. In Lapland and Scandinavia they are never captured except for the naturalist. The Raven is the only feathered enemy against whose attacks the Hunting Falcons have to be upon their guard.

The WANDERING FALCONS (*Falco*) differ from the last-mentioned birds in the inferiority of their size, and the construction of the beak, which is smaller and more decidedly curved; the feet are not so entirely covered with feathers, and the tail is somewhat shorter in comparison with the wings.

THE PEREGRINE FALCON.

The PEREGRINE FALCON (*Falco peregrinus*) is the member of the family with which we are most familiar. The plumage of the old bird is light slate colour on the upper part of the body, and marked with dark grey triangular spots, which produce a striped effect; the brow is grey, the tail striped with bright grey and bordered with yellow towards the tips of the feathers; the wing-quills are greyish black, the inner web being marked with reddish-yellow spots arranged in stripes; the throat is yellow, and



THE PEREGRINE FALCON (*Falco peregrinus*).

marked by two black streaks that commence on the cheeks; the lower part of the breast and belly are reddish yellow, the former streaked with brownish yellow and marked with lozenge-shaped spots; the hinder part of the body is striped with dark irregular patches. During the life of the birds the plumage is covered with a greyish dust. The female is brighter in colour than her mate. The iris is dark brown, the cere, corners of the mouth, and bare places around the eyes are yellow. The young are blackish grey upon the upper part of the body, every feather being bordered with reddish yellow; the throat and upper part of the breast are white or greyish yellow, streaked with light or dark brown; the beak is light blue, the cere and naked places on the head blueish or greenish yellow. The old male is from

sixteen to eighteen inches long, and from thirty to forty broad, whilst the female, on the contrary, is from eighteen to twenty-one inches long, and forty to forty-two inches broad ; the wing measures from fourteen to fifteen and a half inches, and the tail six and a half to seven and a half inches.

The name of *Peregrine* or *Wandering Falcon* most accurately describes the habits of this species, which is found almost throughout the wide world. Its habitat extends from Northern Asia and Western Europe, and during the breeding season it frequents the northern coasts of the Mediterranean. As winter approaches it migrates to Africa, visiting the very heart of that continent, and occasionally making its appearance in the neighbourhood of the Cape of Good Hope. According to Jerdon, the Peregrine Falcon is regularly met with in India throughout the cold season, during which it roams about the country lying between the Himalaya Mountains and Cape Comorin, but is seen in the greatest numbers on the coast or upon the banks of rivers. These birds appear in India towards the first week in October and leave again in April, but never breed there. The species inhabiting America also migrates farther south, but we cannot speak with certainty as to their being found in Mexico, though we have known instances in which they have flown across the Gulf of Mexico—indeed, so great are their powers of endurance when upon the wing that a distance of a hundred miles seems to be regarded as a mere pleasure excursion by these restless marauders. The Wandering Falcon is very courageous, and its powerful body and bright intelligent eye clearly indicate a high standing in respect to its natural gifts. When about to take flight this species usually spreads its tail, and flies for a short distance close to the ground before rising into the air, where its course is very rapid, and produced by quick, hurried strokes of the pinions ; during the period of incubation it soars to a considerable height, but at other seasons keeps comparatively near the earth, and is easily recognised by its slender form, narrow tail, and long, pointed wings. Dense woods afford these birds the retreats they prefer, and even there they rarely retire to rest until late in the evening, selecting their sleeping place with great care in some thickly-covered nook : whilst reposing they perch upon a branch with the neck drawn in so completely as to give their head the appearance of growing from the shoulders, the black cheeks and white throat adding considerably to their striking appearance as they sit warily upon their guard against approaching danger. The cry of this species is powerful and full-toned, but is rarely heard except during the breeding season.

Nothing can exceed the terror in which the Peregrine Falcon is regarded by such of its feathered brethren as cannot compete with it in strength or activity—indeed, no bird from a Wild Goose to a Lark is safe from its murderous attacks. Its prey, which is usually seized when upon the wing, is made to rise from the ground by a variety of tactics. A Partridge it terrifies by performing gyrations above its head, until the frightened creature endeavours to seek safety in flight ; Pigeons are often so panic-stricken as to plunge into the water, and Ducks are frequently so overcome with fear and exhausted with their struggles as to be powerless to dive, and thus to elude the dreaded foe. Rapidity of flight is no security against its attacks. Some species of Pigeons endeavour to save themselves by crowding close together in a thick mass, and quitting the locality with all possible expedition ; but even this stratagem rarely meets with complete success, for some weary straggler is pretty certain to fall into the clutches of the ever-watchful enemy, who darts down upon its victim like an arrow from a bow. Immense numbers of Crows are also destroyed by these birds, who often subsist for whole weeks together upon their flesh : despite the well-known courage of the Crow, it seems to consider, when brought face to face with this powerful tyrant, that “discretion is the better part of valour,” and at once endeavours to slink off unobserved, or beat a very undignified retreat ; all attempts at flight are, however, perfectly hopeless, for so rapid is the speed of the pursuer that the eye cannot follow its course, as it flashes down with a whizzing sound, and pounces fiercely upon its almost paralysed victim—indeed, so incredibly powerful is the shock with which the Peregrine Falcon occasionally descends,

that instances have been known in which the pursuer has actually killed or stunned itself by the violence of its swoop, or has plunged to such a depth in the water, when endeavouring to seize a duck, as to have been drowned in the attempt. Large birds, such as Wild Geese, are generally disposed of while upon the ground, as their size would render it impossible to contend with them in the air, and the flesh is devoured upon the spot where the victim is killed; more portable prey, on the contrary, is carried off to some quiet retreat, where it can be eaten at leisure. Small birds are entirely consumed, but larger kinds are stripped of a portion of the feathers, and the entrails are thrown aside as unfit for food.

Every variety of situation seems to be regarded with favour by this species, and it will live as comfortably in a crowded city as on precipitous and impassable mountain ranges; when about to breed, however, a decided preference is shown for the latter situation, as affording ready-made holes, which require but little labour to convert them into dwellings for the young; hollow forest trees are also employed for this purpose, and a pair of Wandering Falcons often render their preparatory exertions still more light by the appropriation of a Crow's nest. The eyrie is very slightly constructed of twigs or brushwood, and the eggs, three or four in number, are laid about May or June; these are round, of a yellowish red, spotted with brown. The task of brooding devolves entirely upon the female; the young are fed at first upon half digested flesh, and afterwards with the same in its fresh state. When fledged they are carefully instructed in all the arts required in their freebooting life, and only withdraw themselves from their parents' protection when fully competent to do battle with any member of the numerous species against which their family wages constant war.

One strange habit of the Peregrine Falcon must not be passed over without notice—namely, that at the very first attack made upon it by even the most insignificant and cowardly of feathered assailants, it will at once throw down its prey, or even allow it to be seized and carried off by foes of so timid a character that a spirited clucking hen might drive them from the spot. We have ourselves seen in North-eastern Africa one of these fierce and strong marauders resign possession of three Ducks in succession when beset by an impudent party of feathered mendicants, amongst which the prey was dropped without even an attempt at resistance. Most serious and extensive is the destruction caused by these birds, and since the days of falconry have passed away no service rendered by them can in any degree compensate for the many injuries they inflict upon our property—indeed, but little can be said in their favour, except that they are imposing in their appearance when sailing through the realms of air.

When caged they will sometimes live for many years, and exhibit surprising voracity. Naumann mentions having kept a Peregrine Falcon for some time in confinement, and tells us that on one occasion it devoured the whole of a fox in the course of two days; three Crows were only sufficient for one day's provision, but, on the other hand, it could, if required, fast for a whole week; this bird would seize six Sparrows at a time, three in each foot, and dispatch them, as it squatted on the ground, by biting one after the other through the head, laying down each victim in succession until all were killed.

THE RED-NECKED FALCON.

THE RED-NECKED FALCON (*Falco ruficollis*), the smallest and most beautiful of the many kinds found in Asia and Africa, is very nearly related to the bird above described, and is replaced in India by a very similar species called the TURUMDI (*Falco Chiquera*). The head and nape of the neck of the *Falco ruficollis* are rust red, streaked here and there with a dark shade upon the shafts of the feathers; the back, wing-covers, and small quills are of a deep grey (which during the life of the bird has a bluish gloss), and is marked with irregular black spots; the shoulder is light reddish yellow, the tail is dark grey, with a broad white tip, and ornamented with eight or ten white stripes; the throat is

also white, the fore part of the neck, breast, belly, and thighs are light yellowish red, thickly marked with dark grey stripes; the very prominent beard and a streak over the eyes are black, the eye itself is deep brown, the beak greenish yellow, tipped with greyish blue; the feet are light orange.



THE FALCONER.

The male is eleven inches long, and twenty-two inches broad; the wings measure seven inches, and the tail four inches and a quarter. The female, on the contrary, is thirteen inches long, twenty-six and a half broad; her wing measures about eight inches, and her tail five inches and a half.

According to our own observations these beautiful birds are met with south of sixteen degrees

north latitude, exclusively frequenting date palms, the broad, fan-like leaves of which form a capital foundation on which to build their eyries. Only on one occasion have we ever seen them on any other tree, but Heuglin tells us that in Central Africa they are also found amongst the Dhuléb palms. A solitary tree of this description is sufficient to induce a couple to settle upon it, and from this lofty and commanding eminence they descend to capture such Weaver Birds, or other small feathered victims, as approach them, darting upon them with a velocity and dexterity that, in our opinion, will



THE TREE FALCON (*Hypotriorchis subbutco*).

bear comparison with the powers of flight possessed by any of their congeners. Large birds they seldom or never attack, and will live not only at peace with them, but actually allow one kind, the Guinea Pigeon (*Stictocnas Guinea*), to build upon the same branch. We never succeeded in our endeavours to inspect one of their eyries closely, as the Dhuléb palm is quite inaccessible to climbers.

We shall confine ourselves to Jerdon's description of the Turumdi. This bird is found throughout the whole of India, but is most numerous in the open country, where it prefers the vicinity of man, and rather avoids than seeks the recesses of the woods and forests. It hunts in pairs, and lives

principally upon small birds, such as Larks, Sparrows, or Water Wagtails, and will eat field mice. The eyrie of the Turumdi is built at the summit of a lofty tree, and usually contains four eggs of a yellowish brown colour, sprinkled with brown spots. The young leave the nest at the end of March or beginning of April. This species is sometimes tamed by the Hindoos, and employed in the pursuit of Quails, Partridges, and similar birds. We have known instances in which they have been trained by their masters to hunt in parties.

THE TREE FALCON.

The TREE FALCON (*Hypotriorchis subbutco*) is but little inferior to those we have described, either in its powers or the nobility of its appearance. The members of the family of which this bird is the type are smaller than the Falcons we have mentioned, and are distinguished by their elongated bodies, comparatively long and sickle-shaped wings, which extend as far as, or in some instances beyond, the extremity of the tail. The Tree Falcon is twelve inches long, and thirty broad; the wing measures nine and a half, and the tail nine inches; the female is one inch and a half longer, and from two to three inches broader than her mate. The entire upper portion of the body is blueish black, the head of a greyish shade; the nape is spotted with white, the quills black, bordered with reddish yellow, and marked upon the inner web with from five to nine reddish irregularly oval patches. The tail-feathers are slate colour above, grey beneath, and ornamented on the inner web with eight irregular reddish-yellow spots, which form a kind of border; the two middle feathers are without these spots. The lower part of the body is white or yellowish white, marked from the head downwards with longitudinal black streaks; the wings and lower tail-covers are beautiful rust red; the beard is very plainly indicated; the eye is dark brown, the naked ring by which the latter is surrounded, the cere, and feet are yellow; the beak is dark blue at its tip, and of a lighter shade towards its base. In the plumage of the young birds the blueish-black feathers that cover the back are bordered with reddish yellow; the light spot upon the nape is larger than in the adult, and of a yellow colour; the lower part of the body whitish yellow, marked with long black streaks; the wings, lower wing-covers, and clothing of the legs are yellowish, the feathers of which the latter are formed having black shafts.

This species inhabits the whole continent of Europe and the cooler portions of Asia; it also visits India in large numbers during the winter, but is rarely seen in Northern Africa. Eversmann tells us that it is found in great numbers in the country near the Ural Mountains. In the central portion of our continent it usually makes its home amongst the trees of the open country, rarely visiting the forests, except during the course of its migrations; in these countries it is a summer guest, leaving about September or October, and returning in April. The flight of the Tree Falcon is extremely rapid, and bears some resemblance to that of the Swallow; the wings are held somewhat arched, and their stroke is short and quick; its evolutions through the air are often extremely beautiful, and are characterised by light and graceful gyrations as it rises aloft or sinks rapidly to the ground. The Tree Falcon, as its name suggests, usually prefers to perch upon trees, and but rarely seeks the ground, except when engaged in devouring its prey. The migratory season commences in autumn, and during their journeyings the pairs keep together with the utmost constancy, in spite of the many fights and squabbles that arise amongst the members of the party. The voice of this bird is clear and not unpleasing, though it consists but of a single note. In its habits it is extremely intelligent, and so very shy and cautious that it only ventures to yield to sleep when the darkness of night has fully closed in.

Field Larks appear to be the favourite food of the Tree Falcon, though it by no means objects to other birds—indeed, it is regarded as a formidable enemy even by the most rapid of the Swallow tribe. Naumann tells us that an instance came under his own observation in which a Swallow was so terrified

at the appearance of one of these redoubtable enemies that it fell as though dead to the ground, and only ventured to open its eyes and give signs of life some little time after he had taken it in his hand. Occasionally, if hotly pursued and other means of escape appear impossible, Larks will seek refuge and hide themselves near the protecting feet of the ploughman or of horses, as they wend their way about the fields. Swallows endeavour to save themselves by uniting into flocks, and whirling at a respectful distance above the heads of their dread pursuers. The Tree Falcons will also catch insects when upon the wing, and devour large numbers of grasshoppers, dragon-flies, and ants during the whole time that the latter are engaged in swarming.

The eyrie is usually built upon a high tree, and resembles those of other Falcons as regards its exterior, but the interior is lined with wool, hair, or some other soft and elastic material. The eggs are laid in July, and are from three to five in number, and of a greyish white or greenish colour, covered with light reddish-brown spots, which are most thickly distributed over the broad end. Lenz tells us that one Tree Falcon will destroy no fewer than 1,095 small birds annually. This species was formerly trained for hunting purposes, and is, when domesticated, one of the most intelligent and docile of its family.

THE BERIGORA.

The BERIGORA (*Jeracidea Berigora*) is the most remarkable among the many birds of prey inhabiting New Holland, and constitutes, as it were, a connecting link between the Noble Falcons and the next group. The Berigora possesses the general shape and beak of the Falcons already described, but is distinguished from them by the inferior strength of its wings, in which the third quill is longer than the rest, as well as by the length and slender formation of the tarsi, and toes furnished with claws of no great strength. The length of the male is about sixteen inches, the female is somewhat larger, but exactly resembles her mate in the colour of her plumage. The feathers upon the top of the head are reddish brown, with fine black streaks upon the shafts; the middle of the back is reddish brown, the shoulders, wing-covers, and tail-feathers are brown, edged and spotted with a reddish shade; the throat, breast, middle of the belly, and lower wing-covers are pale fawn colour, with a delicate brown line passing along each side of the shaft; the feathers that cover the sides are reddish brown, surrounded by a border of yellowish-white spots; the hose are brown, spotted with red; the secondary quills are blackish brown, marked upon the inner web with large fawn-coloured patches. The cere and eye-rings are light blue, the beak lead colour at its base and black at the tip; the eyes are of very deep brown.

The Berigora is met with throughout the whole of Van Diemen's Land and New South Wales, where it lives in large flocks, except during the period of incubation, when each pair dwells apart from the rest. The food of this species consists principally of reptiles and insects, but it will also devour small birds and quadrupeds, and by no means despises carrion. The settlers regard these birds with great disfavour, on account of the number of young Chickens they manage to abstract from the farm-yards, and seem entirely to overlook the many and great services they render by the destruction of enormous numbers of insects and caterpillars. The eyrie is built near the summit of the highest gum-trees, and the eggs, which are laid about October and November, differ so considerably in their hues that two of a brood are seldom alike; various shades of whitish fawn-colour, spotted with pale reddish brown, usually predominate.

The KESTRELS (*Tinnunculus*) form a group that stands next in order to the True Falcons, from which they are distinguished by the inferiority of their destructive powers. They all resemble their more highly gifted brethren in their general form, as well as in the structure of the beak, wings,

and tail, but are recognisable by their lax and streaming plumage, the comparative weakness of the quills that form the wings, the length of the tail, their strong and short-toed feet, and, lastly, by the difference in the colour of their feathers, which varies with the sex.

THE LARK KESTREL.

The LARK KESTREL (*Tinnunculus alaudarius*) is a very handsome bird, about twelve and a half inches long, and twenty-seven broad; the wing measures nine inches and a quarter, and the tail six



THE LARK KESTREL (*Tinnunculus alaudarius*.)

inches and a quarter. The feathers upon the head, nape, and tail of the male are grey, terminating in a blueish-black patch, bordered with white; the mantle is of a beautiful yellowish red, each feather being tipped with a triangular spot; the throat is whitish yellow, the breast and belly reddish grey or pale yellow, streaked longitudinally with black; the wing-feathers are black, marked with from six to twelve triangular white or reddish spots upon the inner web, and have a light border towards the tip; the pupil of the eye is dark brown, the beak greyish brown, the cere and bare places round the eyes are greenish yellow, and the feet lemon colour. The cheeks are ornamented by a very distinct streak. In the female the upper part of the body, as far as the top of the back, is of the hue of red chalk, marked with longitudinal black marks; the feathers on the back are ornamented with irregular spots, the tail is greyish red, with broad and narrow stripes, and the rump is grey. The colours upon the lower parts of the body are the same as those of the male. The plumage of the young birds resembles that of the mother.

This species is found throughout the whole of Europe, especially frequenting mountainous districts; it is most numerous in the southern countries of our continent, where it is considered as a summer bird, and whence it migrates as winter approaches. It usually frequents lofty trees, old ruins, and rocks, where it constructs its eyrie. The nest externally resembles those of its congeners, but is lined with roots, stubble, moss, and the hair of various animals. The brood consists of from four to seven round eggs, of a white or reddish-yellow colour, spotted with brownish red. The care of hatching the young family devolves entirely upon the female parent, who feeds her charge principally with mice and insects; they will also eat lizards, frogs, or young birds.

THE KESTREL.

The KESTREL (*Tinnunculus cenchris*) is a species very similar to the bird above described, and likewise inhabits the southern countries of Europe. The male is twelve inches long and twenty-



HALIAEETOS VULGARIS L. — Bald Eagle
— *Haliaeetus leucocephalus* L.

six inches broad; the wing measures ten inches and the tail five and a half. The body of the female is somewhat larger than that of her mate, being thirteen inches long, and twenty-eight across the span of the wings. The plumage of the male bird is of a blueish grey upon the head, large wing-covers, posterior quills, and tail; the back is brick red, the feathers upon the breast yellowish red, marked with very small, often scarcely perceptible, spots; the tail is tipped with black. The eyes are dark brown, the beak light brown, and the feet lemon colour; the claws are yellowish white. The female



THE RED-FOOTED OR EVENING FALCON (*Erythropus vespertinus*).

closely resembles the female Lark Kestrel in appearance, but is paler in colour, and, moreover, recognisable by its whitish-blue tail and white claws. The young are like the mother.

Spain and the neighbouring islands, Malta, South Italy, and particularly Greece, together with some of the countries lying still farther east, form the habitat of these birds; they are also very common upon some of the Russian steppes, but are rarely met with in mountainous districts. Such lowland regions as are in the immediate neighbourhood of water afford them the retreats they prefer, as there they find that unfailing supply of insect nourishment upon which they almost entirely rely. This species appears in Greece at the end of March, and migrates about the end of September. The eggs are usually laid at the bottom of some old wall or in the roofs of houses, whether the latter

are inhabited or not. The brood consists of from four to six eggs, closely resembling those of the species last mentioned, but rather smaller (see Coloured Plate IV., Fig. 19). During the period of incubation the parents are often so intent on their duties that they will allow themselves to be captured by hand. The flight of the Kestrels is light and rapid, but far inferior to that of the True Falcon; occasionally they will soar high into the air, but usually fly at no great distance from the earth; when about to seize their prey, they hover before descending, performing the latter movement with considerable celerity. Whilst perching, the plumage is allowed to droop carelessly, and thus gives the bird the appearance of being larger than is actually the case. Upon the ground they have the advantage over the True Falcons, as the greater length of the tarsi renders their movements light and easy.

As regards the perfection of their senses they are by no means behind their more powerful kindred, though they differ from the latter considerably in disposition, being extremely lively and bold. Above all things they seem to delight in tormenting birds much larger than themselves; they pursue the most formidable amongst the many tyrants of the air without the slightest fear, and persecute and annoy the Screech Owl incessantly; they will often confront even man himself with great spirit and determination, and in some countries live upon the most friendly terms with the inhabitants of the houses in the thatch of which they lay their eggs. Their cry is a clear cheerful note, which varies in its sound according to the feeling it is intended to express. When caged they may be rendered extremely tame, so that they may be permitted to fly in and out, and will come at their master's call.

The Kestrels usually leave their sleeping-places very early in the morning, and continue to sweep over the face of the country long after the shades of evening have closed in. When about to migrate they assemble in large flocks, which remain associated until they return in the spring. Jerdon tells us that both species are regular visitors to Southern Asia, and we ourselves have seen great swarms of them in Central Africa during the months that form our cold season. Districts abounding in locusts are generally preferred as winter quarters, such localities affording an inexhaustible supply of food; indeed, those who have never seen an army of locusts can form no adequate idea of the immense numbers in which they are often met with; whole tracts of woodland are completely covered by them, and their hosts darken the air whenever they are roused from their work of devastation. To the Kestrels these swarms furnish a rich field for exertion and active enjoyment; perched upon the highest branches of the mimosa, they await the moment when the locusts take wing, and then dart upon their prey; in vain the insect endeavours to free itself by biting the enemy's foot; the powerful antagonist makes short work of its struggles by crushing the head; the wings and feet are then torn off, and devoured while the bird hovers in the air. We have often amused ourselves by shaking the trees or bushes, and thus rousing the locusts, in order to enjoy the pleasure of seeing the dexterity displayed by the Kestrels during these onslaughts; for, strange to say, the insects appeared fully to understand their danger, and used all possible means to avoid their evidently dreaded enemies.

THE RED-FOOTED OR EVENING FALCON.

The RED-FOOTED OR EVENING FALCON (*Erythropus vespertinus*), one of the most beautiful members of this group, inhabits Southern Europe. It is distinguished from the Kestrels by the comparative shortness of its beak and tail, and by the great variety observable in the plumage, which differs not only with the sex but according to the age of the bird. The male of this species is about twelve inches long and thirty inches broad; the tail measures about five inches. The female is one inch and a half longer and two inches broader than her mate. When the male is in its full beauty the middle of the belly, hose, and under tail-covers are of a bright rust red, the rest of the plumage being

of an uniform slate colour, the tail somewhat darker in hue than the other feathers. The cere, the bare place round the eyes, and the feet are brick red ; the beak is yellow at its base and greyish blue towards the tip. The head and nape of the female are light rust red, the rest of the body blueish grey, striped with a darker shade upon the mantle and tail ; the beard is brown, but with this exception, the front of the throat and sides of the neck are entirely white ; the lower parts of the body are reddish, some of the shafts of the feathers being streaked with brown ; the cere, eye-rings, and feet are orange. In the young birds the upper part of the body is dark brown, having every feather bordered with reddish yellow ; the tail is of the latter colour, and marked with eleven or twelve dark streaks ; the belly is reddish white, and the bare spots are lighter than in the female ; the pupil of the eye is invariably brown.

The Red-footed Falcon inhabits the South-eastern parts of Europe and Central Asia, and is but rarely seen in the western countries of our continent ; the extensive steppes of Hungary, Russia, and Asia must be regarded as its actual habitat, and from these tracts it migrates about August or September to India (it seldom visits either Egypt or Africa), and returns to Europe early in the spring. So closely does this species resemble the Kestrel in its movements, that when seen flying or perching it is extremely difficult to distinguish the one from the other, and the sound of their voices is almost identical ; but when upon the ground the Red-footed Falcon is more active than the Kestrel ; it lives almost entirely upon insects, and devours enormous numbers of grasshoppers, butterflies, beetles, and dragon-flies, usually capturing its prey when upon the wing. The eggs, four or five in number, are laid about May ; they are small and round, with a very thin, yellow shell, marked with various spots of dark and light reddish brown. It is no uncommon circumstance for a pair of these Falcons to seize upon a Magpie's nest ; and as the owner is generally not inclined to resign possession quietly, but calls loudly to its companions for assistance, long and severe are the battles that ensue. The young leave the nest about April, and are carefully trained in the art of obtaining prey by their parents until such time as the flock migrates. These birds are easily tamed, and cannot fail to attract attention by their beauty and the affection with which they regard those who show them kindness.

THE SPARROW FALCON.

The SPARROW FALCON (*Rhynchodon sparverius*) is a well-known member of this group, inhabiting the entire continent of America. This species varies so remarkably in its plumage as to render description almost impossible ; indeed, it would be difficult to find two specimens completely alike in their colours. Suffice it, therefore, to say that the feathers upon the back are usually reddish brown, striped with black ; the outer web of the quills is black, the two exterior quills being bordered with white, and the rest spotted with white towards the root ; the inner web is tipped with white and marked with conical black and white spots, which run one into the other. The eyes, cere, and feet are yellow, the beak is tipped with blackish blue, whilst the middle portion is whitish blue and the base yellow. This species measures about nine inches ten lines in length, and is about twenty inches broad ; the wing measures six inches nine lines, and the tail about four inches. The female is an inch longer and two inches broader than her mate. Some naturalists consider that the species found in North and South America are different, but in this opinion we do not concur.

Our readers will form an accurate idea of the Sparrow Falcon if we describe it as a very powerful and courageous Kestrel, which subsists not merely upon insects or small quadrupeds, but will grapple with the largest of its own formidable race. Tschudi tells us that it pounces upon an adversary five times as large as itself, and despite all efforts to dislodge it, succeeds in overcoming its prey. Naturalists differ as to the situations preferred as breeding-places, some affirming that the

eyrie is found in holes of trees, and that the brood consists of from five to seven eggs ; whilst Tschudi, on the contrary, tells us that the nest is placed upon rocks or old buildings, and that not more than two or three eggs are laid ; these are round, of a white or reddish yellow tint, and spotted with brownish red. At the approach of winter the greater number of these birds migrate to Brazil ; some few stragglers, however, remain throughout the year in their native country.

The DWARF FALCONS (*Hierax*), the smallest members of the Falcon group are met with in Southern Asia ; they do not exceed a Lark in size, but are as courageous and bold as the largest of their marauding fraternity ; they are recognisable by their short powerful beak, the upper mandible of which is toothed, and furnished on each side with a projecting appendage ; by their short wings, of which the second and third quills are longer than the rest ; and by their very short tail, cut straight at its tip ; the tarsi are short and strong, the middle toe slightly elongated, and the claws very powerful. These elegant little Falcons, which from their appearance have been compared to small Parrots, are inhabitants of India and the Moluccas, no less than six different species having been described as belonging to those parts.

THE MUTI.

The MUTI (*Hierax caerulescens*) is about seven inches long ; the wing measures three and a half inches, and the tail two inches and a quarter. The top of the head, nape, tail, and the long silky feathers that form the hose are of a blueish black ; the face, part of the head, throat, breast, and a stripe which passes from the corner of the beak to the shoulder are reddish white ; the belly is rust red ; the tail is ornamented with round white spots, which form four delicate borders, and the wings are adorned in a similar manner. The eye is dark brown, the beak and feet blueish black. This species is found throughout the whole of Southern Asia, and is extensively employed by the inhabitants of the countries it frequents in the pursuit of quails and other birds of considerable size. When used for this purpose the falconer carries the Muti in the palm of his hand, and tosses it like a stone into the air towards its intended prey ; it is from this circumstance that the species has received its Indian name, the word "Muti" signifying a handful. Nothing can exceed the boldness displayed by this small Falcon during the chase ; it will attack birds much larger than itself with unflinching courage, rushing down upon them after the manner of a Hawk.



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