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A BOOK OF BIRDS

W. P. PYCRAFT, A.L.S., F.Z.S.

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A BOOK OF BIRDS

R. L. Walker.
1908.

Fig. 1. Ostrich
(Struthio camelus).

Fig. 2.
Rhea
(Rhea americana).

Fig. 3.
Ceram Cassowary
(Casuarius galeatus).

Fig. 4. Apteryx or Kiwi *(Apteryx mantelli).*

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BY

W. P. PYCRAFT, A.L.S., F.Z.S.

Member of the British Ornithologists' Union; Hon. Member American Ornithologists' Union; Vice-President of the Selborne Society
Assistant in the Zoological Department of the British Museum; Author of "Story of Bird Life," etc., etc.

WITH 30 FULL-PAGE COLOURED PLATES
AND MANY ILLUSTRATIONS IN THE TEXT

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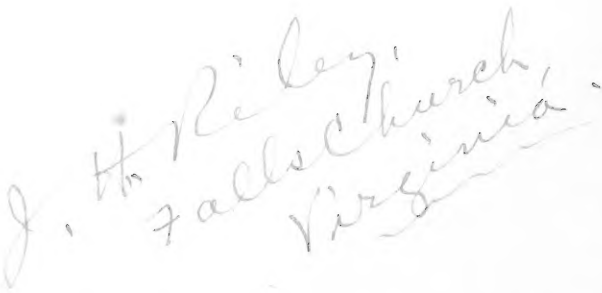

PREFACE

The aim of this book has been to present the reader with a general survey of the principal groups of modern birds, such as are likely to be met with, for example, in Zoological Gardens or in museums. Of necessity many of the less-known species do not find a place here. A little reflection will show, indeed, that in no single volume would it be possible to give anything like an intelligible description of the 14,000 different species of birds known to Science. To have attempted the task in a book of this size it would have been necessary to restrict the description of each species to four words!

In these pages, however, the reader will find a concise account of some of the more important facts with regard to the life-history of the birds of Great Britain and of their European relatives, as well as of a number of the more remarkable birds of other lands, which, for one reason or another, should interest those who, without claiming expert knowledge, have a real and deep love for Ornithology.

W. P. PYCRAFT.

London, January, 1908.

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A BOOK OF BIRDS

CHAPTER I

INTRODUCTORY

THE study of Birds, or, as some prefer to call it, the study of Ornithology, began with the dawn of man's civilisation ; for, having discerned that birds were good for food, a study of their habits and movements became necessary to him, as his victims became more and more wary. Soon however, no doubt, it was discovered that some species, at any rate, were capable of domestication, whereby a regular supply of food was easily and certainly secured : and with this acquisition of "livestock," probably, the "civilisation" of man commenced. For there was now but a step to the keeping of birds as pets, a practice which was fraught with the profoundest results, since it is believed that the keeping of domesticated animals, either for pleasure or profit, proved one of the most important factors in transforming what, till then, were but hordes of wandering savages into more or less orderly communities, thereby laying the foundation for the complex human societies of to-day.

But the peculiar fascination which birds have always exercised over the mind of man has been not a little to the hurt of the birds. They soon found a place in his religious beliefs, and at the same time in his superstitions. Thus, while some came to be held in high honour, others were regarded as birds of ill-omen ; and to this day many have not recovered from the infamy with which they were

branded by the ignorant of those dark days. Among the ancient Greeks, and still more ancient Egyptians, birds were held in no light esteem, as may be seen in the literature of the one, and the hieroglyphics on the Pyramids of the other ; while among later people, from Jewish historical times onwards, we find that, in one way or another, birds are constantly referred to. But the scientific study of birds, nevertheless, cannot be said to have begun until centuries after these old observers had passed away.

The foundations of this study, one cannot but feel proud to think, were laid by two Englishmen, Francis Willughby (born 1635, died 1672) and John Ray (born 1628, died 1705). To the labours of these two men—and especially of the former—we owe the first serious and useful attempt to classify birds, and their success was due to the fact that their knowledge was based on practical experience, combined with an ability to weigh and analyse the facts they set themselves to arrange. To-day we have adopted quite other ideas as to the relationships of birds and their classification, yet every true ornithologist will regard Willughby and Ray as the patron saints of ornithology. To sketch the further progress of our beloved science, or to trace even in outline the achievements of the many illustrious workers who have so unsparingly laboured in this field during the last two centuries, would be a task too long and too difficult. Our purpose, in this chapter, is rather to give a brief summary of the state of our knowledge of birds generally to-day, which shall be at once interesting, brief, and accurate.

Without more ado, then, let us begin with the question : What is a bird ? Briefly, a bird may be distinguished from all other living creatures by its covering of feathers. Not by this token alone, however, are birds to be distinguished, since they differ almost as markedly in the matter of their skeleton. But it is not enough that we should be able to quote the " hall-mark," so to speak, by which our favourites are to be recognised. At least, it is not enough for those of us who are not content with mere facts—for facts in themselves are about as nourishing as rusty nails. Thus, then, we ask instinctively, How have the birds come by these distinguishing characters ? The answer to this riddle has been furnished partly by the anatomist and partly by those who have spent their lives in reading

the riddles of the rocks. Let us take the anatomist's evidence first. According to him, the peculiarities which distinguish the bird have been derived from the reptiles, and this is nowhere more evident than in the skull. As in the reptile, it joins the neck by a single, rounded boss of bone ; while in the mammals (the great class to which we ourselves belong, the class distinguished by the body-covering of hair, and the fact that the young are suckled by milk) the skull joins the neck by two such bosses. In the form of the backbone and of the hip-girdle, and in the structure of the legs, birds also agree with the reptiles. To state in full, the evidence on which these conclusions are founded would be wearisome to those who are not particularly

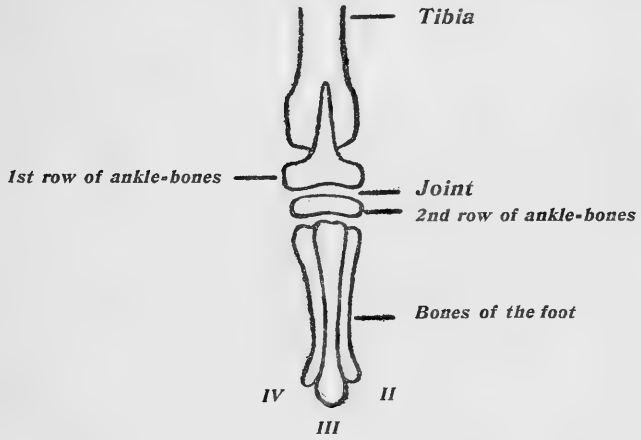

Fig. 1.—Bones of the Foot and Ankle of a Young Fowl, showing the Separate Elements thereof.

interested in dry bones, but we may indicate the nature of the argument by a comparison of the hind limb of the bird and reptile. This limb then, in both, is peculiar in that the ankle-joint is formed in such a way that when the foot is bent the joint turns on a hinge formed between two rows of ankle-bones, while in the mammals the joint is formed by the hinging of the shank of the leg upon the uppermost row of ankle-bones. But the bird's leg, we may remark, is peculiar in that these two rows of ankle-bones have undergone great modifications, and can be seen in their originally separate condition only by examining the chick some time before hatching, though traces yet remain in, say, a young fowl of three months old (see fig. 1).

It is owing to the fact that these peculiarities are not generally known, that most writers of books on birds inaccurately speak of the "legs and toes" of a bird, when by the "legs" they refer really only to the long "cannon-bones," which are clad in scales and often brightly coloured.

A reference to the accompanying diagram should make this clear. Here we have the leg of a fowl. The first joint is formed by the hinging of the femur, or thigh-bone, with the tibia, thus forming the "knee-joint." At the end of this tibia the joint with the ankle-bone takes place; but in the birds, as we have said, the two rows which these small bones make up disappear before adult life is reached. One row, as may be seen in fig. 1, is composed, in the half-grown bird, of a mallet-like piece, the handle of which runs up the front of the tibia or shank, and becomes welded to the "shank"; while the other (fig. 1), originally of several small pieces composed in the embryo, but now forming a thin plate, becomes welded on to the top of the bones of the foot. It is these last which are always, but wrongly, described as the "leg-bones." Really, they answer to the bones of our own feet which lie between the ankle and the toes. The tibia, and the fused row of ankle-bones, is known as the "tibio-tarsus." The toes present peculiarities, which will be described as we proceed.

The great lengthening of the foot-bones has been brought about by the evolution of the bird from a climbing to a walking animal. Originally they were five in number, but are now, like the toes, reduced to four. Of these four, three are now welded together—Nos. II. III. IV.—to form a single "cannon-bone," answering to that of the horse; but in the young bird their originally separate condition can still be traced (see fig. 1). The first of these foot-bones answering to the base of the hind-toe is now reduced to a mere "button" slung by ligaments on to the "cannon-bone." The leg of the old giant reptiles known as the Dinosaurs corresponds marvellously well with that of a modern bird, only in the reptiles the foot-bones had not become welded to form a cannon-bone. So much, then, for the evidence from the skeleton, for the present. The arrangement of the blood-vessels, the structure of the eye, ear, organ of smell, and brain, are all on the reptile plan, and so also are the organs

of reproduction. Similarly, the microscopic structure of the growing feather in the embryo, or unhatched chick, shows that it is really an

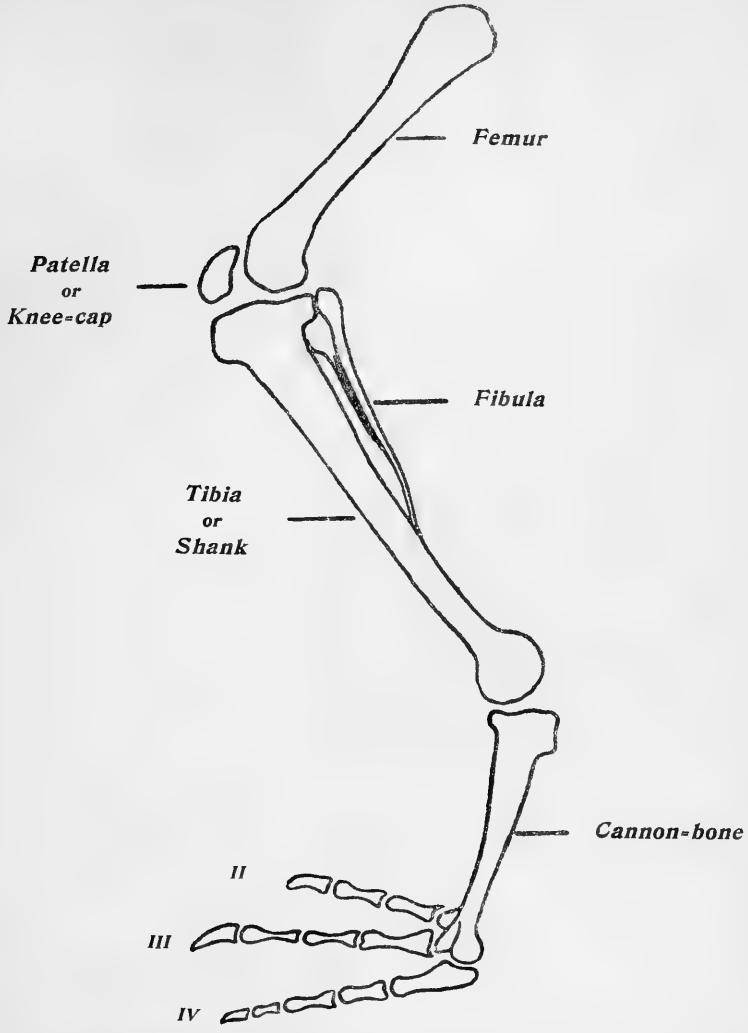

Fig. 2.—Diagram of the Leg of an Adult Bird, showing the Condition of the Limb after the Separate Elements have become welded.

extremely elaborate reptile scale, and is formed on a plan quite different from the hairs of mammals.

But, it may be urged, it is all very well, and it may be quite true, to say that because the reptiles and the birds have so much in common, therefore they must be related. But why should we assume this ?

Well, one of two courses is open to us. Either we must believe that birds were, as used to be held, specially created; or that they have inherited these common characters from a common ancestor, which must have been some sort of a reptile. And in support of the reasonableness of this latter view we may appeal to the evidence which the rocks have preserved for us in the shape of the fossil remains of ancestral birds. In these we have still further and more striking proof of the descent of birds from reptiles.

The earliest fossil bird yet discovered is that known as the Archæopteryx, and this differed from all other birds in one or two very important particulars. In each case they serve to bridge the gap between the reptiles and the birds, though it must be admitted many other links are desirable to make the chain absolutely complete. In the first place, instead of the horny sheaths which cover the beak of living birds, we find the jaws were provided with teeth, set in sockets like those of the crocodile; while in the second, the tail was of great length, being made up of a long row of bones, as in the tail of reptiles. Each bone supported a pair of feathers, as may be seen in our illustration, so that in this respect it was neither like that of the reptile nor of the typical bird. In the latter, the tail is apparently fashioned after a very different manner; but in examining this it must be remembered that what is commonly called the "tail" is really only the outward and visible sign of this appendage, for the feathers alone no more make the tail than does the hair the tail of a dog.

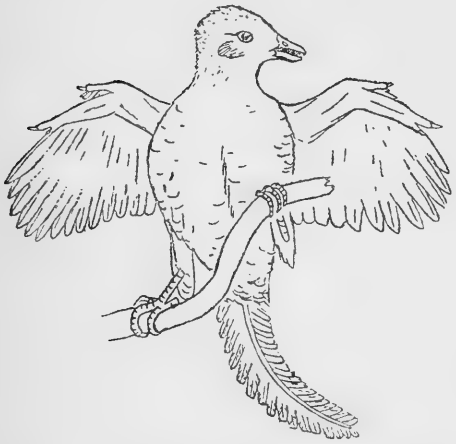

Fig. 3.—The First Known Bird, from a Restoration by W. P. Pycraft.

When we come, then, to examine the arrangement of the tail-feathers, we find that they are set fan-wise about a plate of bone, the last of a series of the eight separate tail-bones which form the termination of the backbone. And if we examine this bony plate

in the embryo of, say, a duck, we shall find that it is really made up of six or seven separate vertebræ, which have become, as it were, telescoped. Now, each of these represents one of the feather-bearing vertebræ in the tail of the Archæopteryx; but by this process of "telescoping," this shrinking in length, they have brought the bases of the feathers they supported close together in the fan-wise fashion we have just described. Here, then, we have a lesson in the evolution of birds—a transformation which will go far to help towards realising how similar changes could bring about the evolution of the reptile into the bird. Some day, without doubt, some yet older form of bird will be discovered, and this will show yet more reptilian characters.

Birds, then, in the possession of feathers, are unique in the scheme of nature; so that by this character alone we may distinguish them from all the remaining backboned animals, while there can be no sort of doubt but that they owe their descent from some reptilian ancestor. Let us now pass on to consider one or two other peculiarities of birds—peculiarities which have gone on developing and perfecting since the time of splitting off from the reptile stock.

Surely the most important of these is to be found in the fore-limb. This we know as the "wing." Even stripped of its feathers, we could trace the wing of the bird from the fore-leg of any other animal. Yet it cannot be used as an absolutely distinctive character, since in some of the Ostrich tribe, for example, it has become degenerate, and so reduced in size as to be hardly recognised; while, if we take fossil forms into consideration, we shall find that it becomes still more dwarfed, until, as in the Moas, it is lost altogether.

The principal features in which it differs from the fore-limb of other animals are to be found in the bones of the wrist and hand. In the wrist only two separate bones can be found, though in the embryo the rudiments of several can be made out; these disappear, however, before hatching takes place. The bones of the hand and fingers are reduced to three in number—the thumb and first and second fingers. The first portion of these finger-bones—which answer to the bones that, extending between the wrist and the bases of the fingers, make up the palms of our hands—are firmly welded together, the base of the thumb being hardly traceable. The second and third are welded together at each end, enclosing a space, while

the finger-joints are represented, in the second finger by two or sometimes three bones, and the third by one bone only.

This very remarkable wrist and hand have reached this unique stage of development as a response to the peculiar needs of the birds' flight, the hand being drawn out into a long rod, across which the bases of the quill-feathers are securely lashed by ligaments. The wing, no less than the rest of the skeleton, furnishes convincing evidence to show that the bird, as we see it to-day, has acquired this form by a slow process of transformation. In many birds, as in the Duck, the Water-hen, or any of the Hawks, there will be found on the thumb and the tip of the second finger a small claw—the last remaining vestige of a claw that was once useful. In some other birds, as in the Barn-door Fowl, for example, similar claws will be found only in the embryo—i.e. the developing chick before it leaves the egg—though quite commonly the thumb-claws persist throughout life. Examine the wing of the next fowl you come across, and likely enough you will find it. Now, if we go back to the Archæopteryx, we shall find that the wing possessed a large claw on each of its three fingers; and, more than this, in this ancient bird we find that the second row of wrist-bones—those at the base of the fingers—though welded together to form a half-moon-shaped bone, yet remained distinct from the fingers. They, in fact, retained throughout life the condition which is met with to-day only in very young birds. When a yet more ancient bird than the Archæopteryx is discovered, it is safe to predict that a yet more complex series of wrist-bones will be found. We shall, in fact, have all the links from the reptile to the present-day bird.

In one particular the bird and the reptile are very different, inasmuch as while the reptiles are "cold-blooded," the birds are hot-blooded creatures; indeed, in this matter they outdo the mammalia, the temperature ranging from 100° to 112°. The highest figure is attained by the smaller perching birds, such as Finches; Hawks do not maintain a temperature above 109°, and Gulls only a little above 104°.

This rise in the temperature of the blood, which, as we have said, we met with first in the birds, is due to several causes, which are too technical to be discussed here in detail. But chiefest among them

we may count the fact that the heart of the bird, like that of the mammal, is a four-chambered heart, whereby a more perfect oxidation of the blood is possible than is the case with the reptiles, wherein the heart has but three chambers. And for this reason, when passed through a four-chambered heart, the impure blood brought back from the body to the right side of the heart is driven thence to the lungs to be thoroughly purified by the air drawn in during breathing and returned to the left side of the heart, whence it is sent over the body without any mingling of the two streams—pure and impure. In the reptile this mingling is unavoidable, and consequently a smaller quantity of the heat-giving oxygen is brought into the system. But, strangely enough, the blood of the reptiles and birds agrees in this, that the little red bodies, or "corpuscles," whose duty is to absorb the air from the lungs and the carbonic acid from the tissues of the body, have each a central "kernel," or "nucleus," whereas the blood corpuscles of the mammal have no nucleus.

It would be wearisome to further expand this question of the circulation of the blood, since to thoroughly understand this matter a somewhat intimate knowledge of physiology and chemistry is required. It is, in short, a question for the physiologist and the medical man, rather than for the ornithologist.

It may seem that this answer to our question, "What is a bird?" has taken us rather far afield. And on this account it may be well briefly to summarise the facts which have been gleaned on the journey.

In a few words, then, a bird is a warm-blooded, egg-laying, feathered biped, having the fore-limbs modified to form wings, and the hip-girdle so adapted as to bring the hind-limbs far forward, to balance the body in walking. These characters, there can be no reasonable doubt, have gradually come into being by the slow transformation of a long chain of creatures which, as we trace them back, grow less and less bird-like, and more and more like reptiles. Though many links in this chain are yet missing, some day they will almost surely be found.

The evidence for this reptilian descent is abundant. Every bird, in the course of its growth from the egg onwards, passes through more or fewer of the ancestral stages; and while some of these carry

us back to phases of development which belong to ancient types of birds long since extinct, others carry us yet farther, and show, in a way that makes contradiction mere stupidity, that the birds and the reptiles have descended from the same common stock.

Concerning Feathers.—Though feathers are so common, so easily procured, yet but few people, even ornithologists, realise what marvels of structural beauty, what wonders of mechanism, they are ; nor is the peculiar fashion of their distribution over the body even now generally recognised. Those who have spent their lives in the study of live birds, as many of my readers have doubtless done, need not be told that the feathers of a bird are peculiar in that they are not, as a rule, generally or evenly distributed over the body, after the fashion of hairs on a dog, for instance, but, on the contrary, are arranged in long and generally narrow bands, or " tracts," separated by wide, bare, or sometimes down-clad spaces.

The fact that these bands vary greatly in shape among birds was first realised by a German naturalist named Nitzsch, who made a long and careful study of the feather tracts of all the birds he could get hold of. As a result of his patient work, he was able to show that the variations in this arrangement followed certain definite lines, each group of birds possessing a type peculiar to itself ; and, for the purposes of convenient description, he gave these tracts distinctive names, which, in the main, are followed to this day.

Briefly, as a result of his work, he distinguished : (1) a head tract, formed by the feathers clothing the head ; (2) a spinal tract, extending from the head down the back of the neck, and along the back to the tail ; (3) a ventral tract, running from the throat down to the base of the neck, where it branches at the shoulders, to run down over the breast and abdomen in the form of two bands, a broad outer and a narrow inner band ; (4) a pair of humeral tracts, which, crossing the upper arm, form the feathers known as the scapulars ; (5) the wing tract, including the quills and wing-coverts ; (6) the tail tract ; (7) the femoral tracts, which run across the thighs ; (8) the leg tracts, which cover the legs below the knee.

The most important of the variations which these tracts present are to be found in the spinal and head tracts. Thus, in the first named, the spinal tract in the Swifts encloses a bare space over the

middle of the back ; while in the Swallows it divides into a fork in this region, leaving the hinder portion of the tract in the form of the usual straight band. In the Finch tribe the middle region of this tract is diamond-shaped. The head tract, again, often encloses a space ; as, for example, in the Humming-birds and Mouse-birds of Africa. The ventral tract similarly presents very marked differences when a number of different kinds of birds come to be examined.

Those who may be interested in this question should take, say, a Sparrow, Starling, Thrush, Pigeon, and Fowl, cut off the feathers with a pair of scissors, close to the body, and compare the differences between them. Since these differences are constant, and since each group presents a type of its own, it has been found that the "pterylosis," as this arrangement of the feathers is called, affords a valuable aid to the classification of birds. For example, the very wide difference in the pterylosis of the Swifts and Swallows was the first indication of the fact that these birds were not related, as they had always been supposed to be, and later anatomical investigations have given further proof that these birds belong to quite different groups.

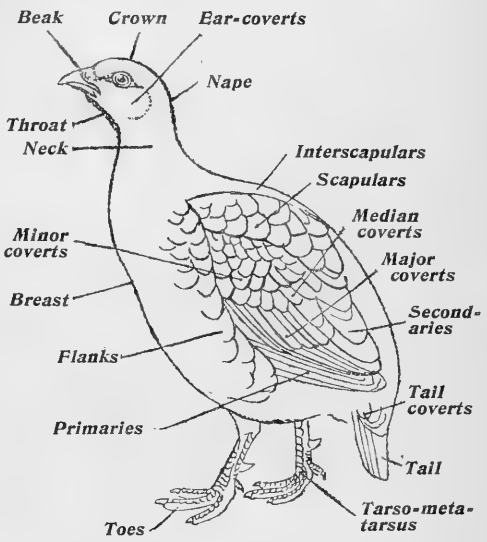

Fig. 4.—Diagram of a bird showing the different areas of the body. (After Ogilvie Grant.)

In the Penguins and the Ostriches the bare spaces so conspicuous in other birds are hardly traceable, the feathers covering almost every inch of the body, at any rate in so far as the trunk is concerned.

In describing the external appearance of a bird these tracts are commonly ignored, the body being mapped out into certain areas such as are indicated in fig. 4.

So far we have spoken only of the feathers which form the outer surface-covering of the bird, the "contour" feathers, as they are

called, because they form the contour or outline of the body. But besides these there are no less than three other distinct kinds of feathers—down feathers, filo-plumes, and powder-down.

Down feathers in many birds are conspicuous by their absence, and are developed most abundantly in water-birds, such as Ducks, for example, growing not only between the feathers, but over the otherwise bare spaces as well, so as to form a thick undergrowth, answering to the under-fur of seals, for instance.

Filo-plumes appear to be present in all birds. They are the long, hair-like growths so conspicuous in the common fowl when plucked. In some birds they attain such a length as to extend beyond the contour feathers, forming, as in some Cormorants, long, white delicate plumes.

The powder-down feathers are found only in a few groups, such as the Herons and Bitterns, and some Hawks and Parrots. In the Herons and Bitterns they form large patches, a pair on the breast, and a patch over each thigh. Of a peculiar woolly appearance, they are remarkable for the fact that they break up, when touched, into a fine powder, which, when rubbed between the fingers, gives an indescribably smooth feeling. It is the powder from these remarkable feathers which gives the peculiar bloom to the beak of many parrots, as well as to the plumage. As to the real purpose of the powder, however, we know nothing.

This brief survey of feathers would not be complete without a few words as to their structural characters. In the typical feather (say, a quill feather), two main parts are to be distinguished—the stem, and the broad flexible blade known as the vane, or vexillum (fig. 5). The stem may further be divided into the quill, or calamus, the hollow part below the vane, and the shaft or rhachis, which is square in section and filled with a white pith. The vane runs along on either side of the rhachis in the form of a series of tapering, flattened rods, the "barbs." They are set so closely together that they must be carefully sought for; and give to the vane that finely grooved appearance, or, rather, the appearance of a series of fine lines running obliquely outwards from the shaft. If an attempt be made to pull these apart, it will be found that some considerable force must be used, and this is owing to the fact that they are locked together by

a second series of flattened rods, known as the barbules, so small as to require the microscope to reveal them. But the mechanism by which this vane is held together is so wonderful, that I venture to ask my readers to bear with me while I endeavour to explain it.

In the diagram of a feather (fig. 5) depicting the different parts, you will notice on the right side a small portion shown as if seen through a magnifying-glass, thereby roughly indicating the appearance of barbs and their barbules. In fig. 6 a portion of this magnified area is shown as it appears when seen in a section and still furthur magnified. You will now see (fig. 6) that each barb, represented by two flattened rods seen in vertical section, bears two quite different kinds of barbules, set so that while one series is cut across, the other remains uninjured. The reason for this will appear presently. The uncut series in this diagram are those known as the anterior radii or barbules, because all point towards the tip of the feather when in their natural position. Each takes the form of a ribbon-like plate set slantwise into the barb (fig. 6), and having half its length deeply cut, as with a fretsaw, to form a number of very delicate, almost thread-like, pieces, the upper short and bearded, the under

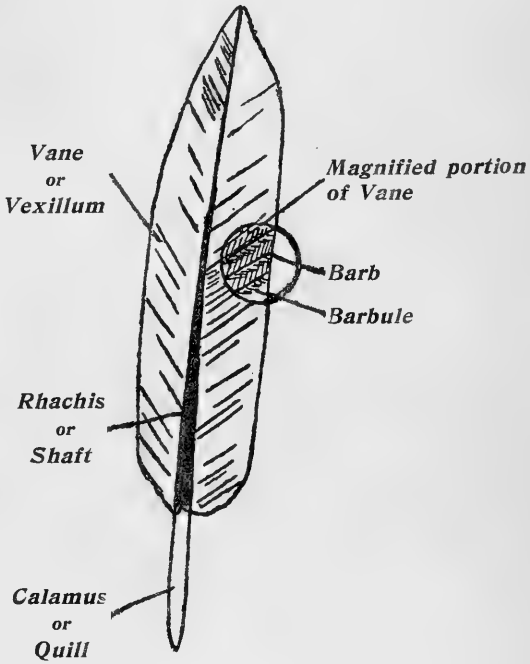

Fig. 5.—The Structure of a Feather, showing a portion highly magnified, from a Drawing by W. P. Pycraft.

terminating in little hooks (figs. 5b and 6); further, the portion bearing these hooklets is twisted, so as to take a vertical instead of a slanting position. The series of barbules which run along the other side of the ramus, or "barb," are known as the posterior barbules, and differ entirely in shape from those of the anterior series just described. Like the anterior series, however, they may be described as ribbon-shaped; but they are curled so that the lower edge touches the lower segment of the curve next in front of it, thus forming a series of troughs, as in fig. 6, where they are seen in section. The upper edge of each of these curved plates, you will notice, is turned over scroll-fashion, and further, as in fig. 5a, it will be seen that the plate is bent upon itself near its middle and is notched along its lower edge.

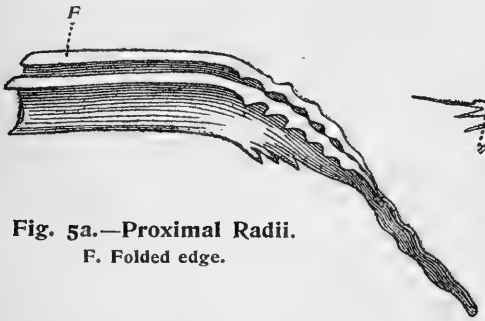

Fig. 5a.—Proximal Radii.
F. Folded edge.

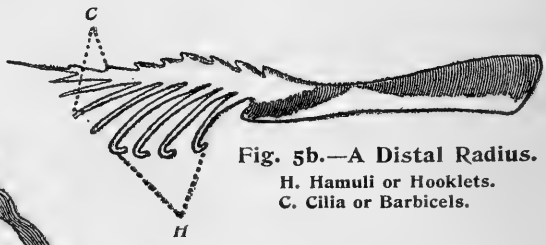

Fig. 5b.—A Distal Radius.
H. Hamuli or Hooklets.
C. Cilia or Barbicels.

Now, when in position, the bent ends of the posterior series are stowed away under a sort of roof, formed by the slanting, ribbon-like, overlapping bases of the anterior series; while the hooklets of the anterior series are thrust down into the troughs formed by the posterior series, and, further, so that they catch hold of the scrolled edges of this series (fig. 6). Mark that these scrolls, or troughs, are kept apart by a very wonderful yet simple contrivance, to wit, the series of "teeth," or notches, near the end of the upper edge of each barbule shown in fig. 5a; but for these, the edges would rub together and cut off the hooklets. In some birds of powerful flight a strengthening band runs along, from the lower edge of the barb to the lower edge of that next behind it (fig. 6, P). This serves to keep the barbs in position during the strain of flight.

Thus, then, this marvellous interlocking is the reason why it is

so difficult to pull the barbs of a feather apart. In the vane of a Crane's quill, in a piece of web 15 inches long, no less than 650 of these barbs were counted, each of which bore about 600 pairs of barbules—that is, about 800,000 for the inner web alone, and more than a million for the whole feather: and all these are necessary to hold the vane together.

This system of interlocking is most perfect in the wing and tail quills. In some feathers, such as have a loose, hairy texture, as in the body feathers of many birds, these hooklets are but feebly, if at all, developed. The loose feathers of the Ostrich tribe also lack them, but here they were once all perfectly developed; when the

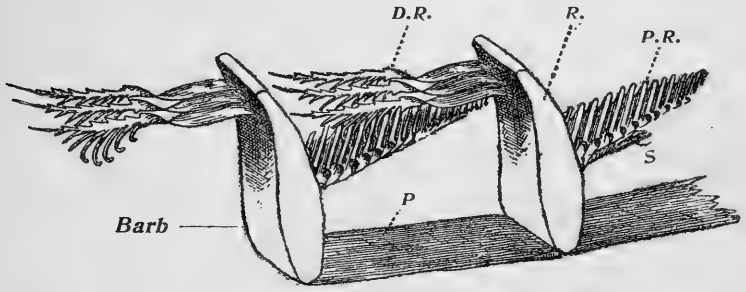

Fig. 6.—Section through two rows parallel to the Distal Radii or Barbules. (After Pycraft.)

D.R. Distal Radii; P.R. Proximal Radii or Barbules.

birds ceased to fly, the feathers degenerated, and the interlocking was lost.

What are known as semi-plumous feathers are degenerate feathers.

Down feathers differ considerably from "contour feathers" in structure, having little or no shaft, all the barbs arising from a common base. These barbs are, further, very long, and have only very minute barbules. In the Ducks and some other birds these barbules take the form of triangular nodules; while in other birds again they are knot-like.

The filo-plumes have a long, slender shaft with a minute vane at the tip. They are, apparently, a degenerate form of contour feather, judging from the fact that during the earlier part of their development many more barbs are present than are to be found in the fully grown filo-plume.

Yet another form of feather is that which is found fringing the mouths of birds like Flycatchers and Nightjars. Bristle-like, there will yet be found about the bases of many a few weak barbs ; the eyelashes of many birds, like the Ostrich, the Ground-hornbill, and some other birds, are similarly fringed with these peculiar bristle-like feathers.

The down which covers the nestlings of many birds, such as Fowls and Ducks, answers to the contour feathers of the adult, but is of a simpler structure ; indeed, it differs in character among different species of the same group. In its most completely developed form it recalls the contour feathers, having a shaft and barbs with weak barbules, but those last have no distinct hooklets, hence the general loose character of down plumage ; while in its more degenerate form the shaft is absent, as in a true down feather.

Where down is present in the adult, it will be found in the nestling just before the feathers begin to appear. In some birds, as in the Hoatzin, indeed, and young Hawks, these early down-feathers, or "pre-plumulæ," attain to so large a size that they eventually play a more prominent part than the typical nestling-down, or "pre-pennæ," so-called because preceding the pennæ, or feathers. In young Cormorants the nestling-down is wholly made up of these pre-plumulæ, which are succeeded later, not by contour feathers, but by down feathers.

Nestling-down in its most degenerate form may be seen in young Pigeons, and the young of most of the Song-birds ; while in others it is altogether wanting, as in young Sparrows, and those of the Crow tribe.

Only in the nestling-down of the Game-birds, Ducks, and the Ostrich tribe is there found an "after-shaft." This, by the way, is a conspicuous feature in the adult feathers of the Emeu and Cassowary (fig. 11, p. 29), where it forms a sort of duplicate of the main-shaft, equalling it in size ; while among the higher birds it is never very large, except in the Game-birds (fig. 7, p. 17), but even here it is downy in texture, and is always shorter than the main shaft.

As touching the growth of feathers, but little can be profitably said here. The earliest traces of feathers must be sought for in the embryo, where the first rudiments of the coming nestling-down

appear in the form of tiny bead-like bodies, which soon sink down into a pit. Next an outer protecting sheath is developed around this feather rudiment, and within this the mass of pulp which it contains proceeds to form first the main axis, and next the barbs and barbules. What will prove the tip of the feather is the first to be formed, and as this forces its way up, the lower parts are added, till at hatching-time the whole of the down feather is completed.

At the base of this down feather lies the germ of the contour feather which is to follow. As this grows the down feather is thrust out upon the tip of the new contour feather, and here it may be attached for a very considerable time, as in the case of young Herons, for example. On its first appearance, as everybody knows, the new feather is ensheathed in a thin, delicate blue wrapper, the first-formed portion of the vane bursting its way through while the lower-most portion of the feather is yet forming. This lower portion is filled with a mass of jelly-like pulp, richly supplied with blood. After the feather has completed its growth, if the barrel, or "quill," of the feather be cut with a sharp knife, the empty cases, or "cells," which held the pulp will be found lying one above the other in the centre of the quill.

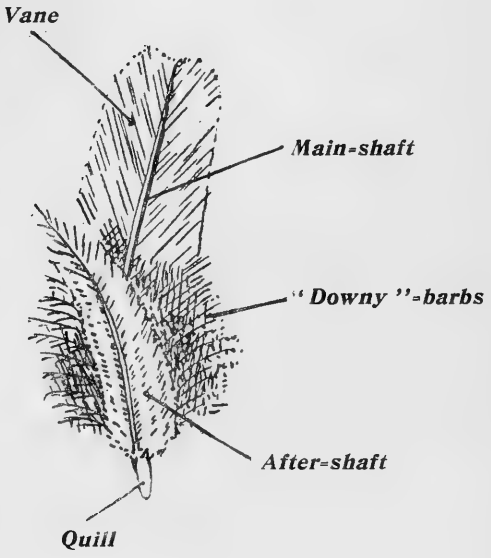

Fig. 7.

In most birds the feathers are renewed at least once annually, by the process known as moulting—a critical time in a bird's life. When there is a lack of suitable nourishment, or when the bird is low in vigour at the moulting-season, the feathers

become curiously indented with fine grooves known as "hunger-marks."

The annual moult takes place generally after the breeding-season; but some birds moult again in spring, when a new and more resplendent livery is put on, as in the case of many of the Plover tribe. But the quills in such cases are not renewed. In some of the Ducks, as in the drake of the common Wild Duck, a dull livery, resembling that of his mate, is assumed—the so-called "eclipse" dress—during the month of June, and this is worn for some weeks. By the middle of August the new and characteristic "breeding-dress" is well in evidence, and by October is completed. This "eclipse" dress, then, answers to the dull dress put on after the breeding-season by the Plovers, and is simply moulted again in a month or two instead of being worn till the following spring. Some of the Game-birds undergo a partial "eclipse" plumage, but this change is confined to the feathers of the head and neck, as in the Grouse, Partridge, and Jungle-fowl.

While some birds put on a new and brightly coloured dress in spring, others brighten up their plumage quite as conspicuously by simply shedding the tips of the feathers assumed at the autumn moult. No better instance of this can be found than that of the Linnet, which, by this shedding process, gains the beautiful rich brown back, and rose-pink breast, that make these birds so much prized. For some as yet unexplained reason, however, captive birds, if taken in July, before the autumn moult, develop yellow in the place of red—which colour is never regained; if taken in the autumn, the red breast appears in the following spring, but never again. The beautiful plumage of the Starling is similarly attained by this method of shedding the outer edges of the feathers, and the Chaffinch gains its blue head in the spring by this same process.

Whether birds can gain an access of colour to the feathers without a moult is still a disputed point. Some hold that there can be no doubt about the matter; while others, apparently as well qualified to speak on the subject, deny the possibility of such a change, absolutely.

That the colour of feathers can be influenced by feeding is a fact too well known to need further comment; but it may be interesting to remark that this fact is well known to the savage people of Brazil,

who feed a species of green Parrot on the fat of Siluroid fishes; the feathers, as a consequence, becoming beautifully variegated with red and yellow. Another race of South Americans change the colours of Parrots by plucking out such feathers as they propose shall be altered, and inoculating the spot from which the feather was taken with the milky juice obtained from certain glands of a small toad. The new feathers now appear of a brilliant yellow colour, and on being plucked out, it is said, grow again of the same colour without any fresh inoculation.

Finally, we have a few remarks to make on the covering of the beak and feet. The jaws of a bird, as we have already remarked, no longer bear teeth, but are ensheathed in horny cases. In many species, as in the Petrels, for example, the beak-sheaths, instead of being entire, one for the upper and one for the lower jaw, are made up of a number of separate pieces; while in the Puffin, and one of the Pelicans, ornamental plates are developed during the breeding-season and shed immediately after. In the Pelican this plate is square in shape, and borne on the ridge of the beak near its middle; in the Puffin it is triangular, and is attached to the base of the beak at each side.

The legs, as a rule, are covered, as in the reptile, in horny scales; but in some birds, as in Grouse, and Sand-grouse, and the Golden Eagle, and many Owls, the shank of the legs, and often the toes also, are covered by long feathers not unlike long, silky hairs, and quite different in character from the quill-like feathers on the legs of the domesticated races of Pigeons and Fowls. In some birds a delicate skin takes the place of scales.

The claws of birds vary greatly in shape, according to whether they play any part or not in the capture of the food. Thus they may attain a relatively enormous size in Birds of Prey, where the claw of the hind-toe is especially large; here the feet are used to hold living prey securely. Some species, indeed, as the Goshawk, for instance, kill their prey by means of the feet and claws. In the Jacanás, birds of the Plover tribe, the claws attain an enormous length, forming long, pointed rods, which with their tremendously long toes serve to enable them to walk on the delicate floating weeds of the rivers which these birds haunt. In some other birds, as for example in the Cassowary,

the claws may be used as a weapon of offence. In this bird the inner claw is of great size and strength, and is capable of inflicting a very dangerous wound.

In many of the Grouse tribe the claws are shed each spring; though in some, as in the Black Game, the shedding is confined to the ragged fringe along the inner side of the claws. This fringe, by-the-bye, recalls the fact that the middle claw in many birds, as the Barn Owl, Nightjar, and Herons, for instance, has a curious series of little teeth running along its outer edge; but so far no one has been able to tender any suggestion as to what purpose it may serve.

Finally we must find space for a brief reference to the formidable weapons which many birds possess in the shape of spurs. These are generally confined to the legs, and may be represented by a pair only, as in the Game-cock, or by several, as in the Peacock-pheasant. But beside these, a few birds have a similar, and equally powerful, armature in the wings. In some, as on the "Screamers" (Palamedea and Chauna), two spurs are developed, one at each end of the fused metacarpal bones—the bones which form the "palm" of the hand; in all other birds but one spur is developed, and this may spring from one of the wrist-bones, as in the Spur-winged Goose, or from the base of the thumb, as in the Jacanás.

Flight and its Mechanism.—While, in the possession of feathers, birds occupy an absolutely unique position in the animal kingdom, they are not to be so distinguished in the matter of their flight, for many creatures far below them in the scale of life are no mean performers in this most enviable form of locomotion; while the Bats, which belong to the man's own class—the Mammalia—on the other side of the scale, are also adepts in the art. In the manner of their flight, at any rate, the birds are peculiar, though, for the matter of that, so also, it may be urged, are the Butterflies and Bats. But, as we shall show, this is not altogether true.

In the study of "the way of the bird in the air," so many factors have to be taken into consideration that it is difficult to know where to begin, and even then, having made a beginning, it is by no means easy to make a plain, straight-forward tale of it. Technicalities will seem to thrust themselves in upon our argument, with many specious promises of making things clearer; but they shall be severely re-

pressed ! Though birds are essentially flying animals, and though to attain this power they have become profoundly modified as to their bodily shape, they have yet, in some respects, not gone so far as, say, the Bats, for the latter have almost completely sacrificed the power of terrestrial locomotion, while the birds have, with some few exceptions, preserved this, or, at any rate, they have preserved the hind limbs as " going concerns " of some kind. With this preamble, let us come to closer terms with our subject. And this we can do better, surely, by a study of the bony framework of the body, in its relation to flight, than by any other way.

Indirectly, of course, the whole body is moulded to bring it into harmony with the requirements of aerial locomotion. The long neck, passing insensibly into the body, which tapers again into the tail ; and the beautifully smooth, rounded surface, formed by the close-fitting overlapping feathers, are very important adaptations to this end, offering the least possible resistance to the air ; while the large mass of the breast-muscles attached to the under surface of the body—which during flight is, as it were, slung between the wings—contribute towards the right ordering of that all-important matter, gravity. In many birds special means have been adopted to secure extreme rigidity, as may be seen by the fact that the separate vertebræ of the back have become welded together to form a stiff, unyielding beam, though in many fliers, as the Parrots, the " Perching-birds," and Gulls, for example, these vertebræ retain their primitive independence. But it is not till we come to examine the bones of the shoulder-girdle and sternum, and of the wings that we find the really obvious adaptations or modifications of the skeleton which flight has brought about.

I will not weary my readers by a long and tiresome comparison between the shoulder-girdle and sternum and fore-limbs of the Reptile and those of the bird, by way of showing how the one became changed into the other, because such a comparison could not possibly carry conviction, except to those who have made a long study of the subject. Let us rather examine the facts as they appear in the bird. By the shoulder-girdle, we may remark, is meant those bones which make up the shoulder-blade, or scapula, the long, straight pillars known as " coracoids," and the furcula, or " merry-thought." These form

a sort of cage fixed on to the front of the sternum or breast-bone. This bears, as everybody knows, a rough resemblance to the hull of a ship, but with an extremely deep keel. A reference to the figure here should make this clear. The deep keel and the broad, flat plate of the breast-bone serve for the attachment of the breast-muscles, which in the bird are of enormous size, equalling or exceeding in weight all other muscles of the body.

These muscles, which constitute the large mass of flesh familiar to every one as the " breast-meat " of a bird as served up at table, are arranged in two layers. The outermost runs forward, to be inserted into a shelf of bone which projects from the upper surface of the humerus, or upper arm ; while the lower runs beneath it, along the coracoid, and finally passing into a round tendon, runs through a pulley formed by the meeting of the coracoid, blade-bone, and merry-thought, and into the head of the humerus. These two muscles play the most important part in raising the body and keeping it in motion, for these, by their contraction, bring about the downward wing-beat. About the other muscles which aid in this work, and those which raise the wings at the end of the stroke, we need not worry here. How intimately the keel is associated with flight may be seen by an examination of birds which fly but little. In them the keel is always shallow, while in those which have lost the power of flight altogether it is reduced to a mere ridge of bone, as in the Owl Parrot (Stringops), or has vanished altogether, as in the flightless Ostrich tribe.

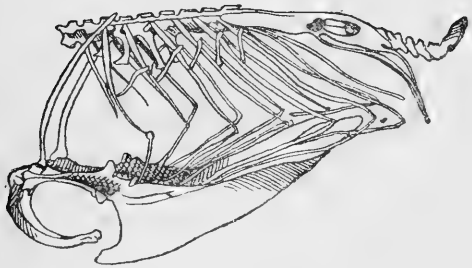

Fig. 8.—Trunk of a Bird, showing Bones of Shoulder and Hip-girdles.

The wing itself is no less profoundly modified, as we pointed out in an earlier part of this chapter. Suffice it to say here, that of the original five fingers, but three remain. Of these the thumb and third finger are reduced, and little more than stumps ; while the second

finger has been elongated to form a long, rigid rod, strengthened at the base by that portion of the third finger which in ourselves contributes to form the "palm" of the hand. In the bird's palm there are but two bones, forming the base of the second and third fingers respectively.

The bird's wing folds in a peculiar manner, so as to form a more or less Z-shaped rod, the humerus, or upper arm, forming the top of the Z, the fore-arm the downstroke, and the hand the base of the Z.

When extended, each of these divisions, or segments, will be found to support a series of long, broad feathers. Those on the hand are known as the primaries, and those on the fore-arm as the secondaries, while those on the upper arm are sometimes described as the tertiaries. These last form a double series, one attached to the upper and one to the under surface of the humerus, or upper arm-bone, and their purpose is to close the gap which would otherwise be left between the wing and the body during flight—a gap which, indeed, would make flight well-nigh, if not quite, impossible in birds which, like the Albatross, have a long humerus. Above the "quill" or "flight" feathers—the primaries and secondaries—will be found a number of rows of smaller feathers, which can be divided into several distinct series. These are the "coverts," and are known respectively as the major, median, minor, and marginal coverts. Of the first and second series—the major and median coverts—there is, of each, but a single row; while the minor and marginal coverts number several rows each. Some of these smaller coverts have, for clearness'

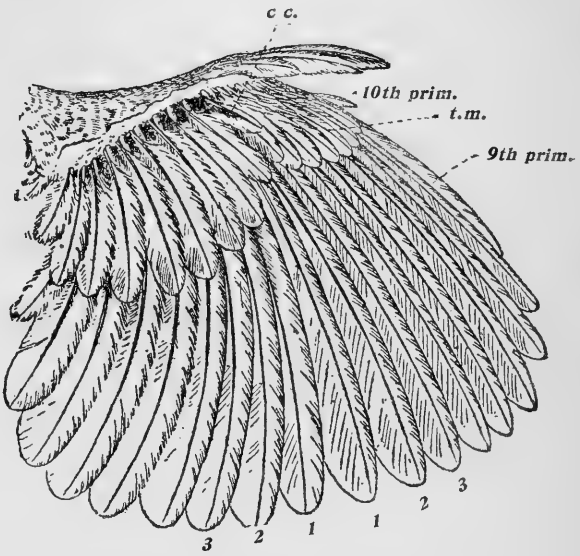

Fig. 9.—Wing of a Bird, showing the Flight Feathers and some of the Coverts.

sake, been removed in the accompanying diagram. The row marked t.m. is formed by the major coverts, or *tectrices majores.*

The manner in which the feathers of the wing overlap one another is a matter of some importance to those who are engaged in the work of classifying birds, and in the mechanism of flight is even more important. If the wing of any bird be examined, it will be found that the free edges of the " quill " feathers and of the major coverts are turned outwards—towards the tip of the wing ; while more or fewer of the other coverts have the free edges turned towards the body. In the first case the overlap is said to be " distal," in the second " proximal." The significance this overlap bears in the arrangement of the quill feathers is easily apparent. Having a distal overlap, when the wing is raised the wind forces its way easily between the feathers, and so offers the least possible resistance to the upstroke ; but during the downstroke this peculiar overlap affords an unyielding surface, and so forces the body upwards and forwards at each stroke. Compared with the bat's wing, the wing of the bird is a vastly superior organ ; and for this reason : the wing of the bat is formed by a membrane stretched between long, slender fingers, so that any serious injury to this membrane permanently disables the creature. The bird's wing, on the other hand, has its flying membrane formed of a number of overlapping, elastic, ribbon-like structures—the quills—which are periodically renewed, and can be replaced if injured.

Organs of Digestion and Air-sacs. With a brief survey of the organs of digestion and the peculiar structures known as the air-sacs, our introductory chapter may well close.

Though once upon a time birds were burdened with teeth, they long ago solved the problem of doing without them, and thereby are to be envied. Like the Tortoise and the Turtle among the reptiles, the birds have replaced their teeth by horny sheaths which encase the jaws, and these sheaths take many forms. As a rule, that of the upper differs but little from the under jaw ; but in many birds this is not so. In the birds of prey, for example, which tear their food in pieces, the sheath of the upper jaw is hook-shaped ; and this is true also of the parrots. Birds which seize rapidly moving and slippery prey, such as fish, have spear-shaped beaks, as in Herons and Kingfishers ; and a similar weapon is developed where a rapid

succession of blows is rained upon hard, unyielding surfaces, as in the beaks of Woodpeckers, which, moreover, have the density of the horn immensely increased. On the other hand, these sheaths are often of great delicacy, as in the case of the Snipe and Woodcock, the fragile, upturned beak of the Avocet, or the long, rod-like probe of many Humming-birds.

In the so-called soft-billed birds, the jaws serve merely as light forceps, and, consequently, they and their sheaths offer no very striking characters; while in Swifts, Swallows, and Nightjars the beak has become reduced to the smallest possible limits—and this because the jaws perform but little work in seizing the food. When slippery victims have to be held, such as fish, the edges of these horny sheaths are armed with more or fewer saw-like "teeth," as in the Mergansers among the Ducks; or these "teeth" may take the form of needle-like spines, as in the Darters. In the Ducks and certain Petrels, horny plates, recalling the baleen-plates of "Whale-bone" Whales, are developed, and these serve as sieves, or strainers, allowing the water taken into the mouth with the food to escape, leaving the solid matter behind.

Fig. 10.—Beak of a Hawk to show the hook-shaped beak used for tearing prey.

This horn-encased region of the jaws forms the "beak," and the shape of this is, as we have just indicated, determined by the nature of the food it is required to manipulate.

From the mouth the food is passed down the gullet, or œsophagus, until, in many birds, such as Pigeons and Fowls, it reaches a special dilatation of the gullet known as the "crop." This is a thin-walled bag, wherein the food is stored and softened, preparatory to being passed on to the stomach. This, in birds, consists of two parts, one lying in front of the other. The first, which is superficially hardly distinguishable from the gullet, is known as the "proventriculus." The walls thereof are richly supplied with digestive glands. From this first stomach the food passes into the second, which, in birds such as Fowls and Pigeons, for example, has extremely thick and

muscular walls, while its cavity is lined with a more or less dense skin, thrown into a series of folds. A stomach of this kind is known as a "gizzard"; but in birds which feed on animal food, such as Hawks and Gulls, there is no "gizzard," the walls of this region of the stomach being thin and soft. Where a true gizzard is developed, sharp stones and sand are swallowed by the bird, and these are stored in the gizzard to aid in the work of grinding up the grain and other hard matter, which form the bird's food. Even flesh-eating birds appear to find it necessary to swallow indigestible matter with their food, and this matter is furnished by the hair and feathers of their victims. Digestion completed, the indigestible residue becomes welded together into a mass, and ejected from the mouth in the form of a "pellet." From the second stomach the food passes on into the intestine, and here all the nourishing portions are absorbed.

The air-sacs are found in all birds. They take the form of a number of thin-walled chambers lying on either side of the body, and in front of the merry-thought. During life these chambers are filled with air drawn from the lungs. These chambers, indeed, are really a part of the lungs; but their precise structure cannot be described here, since this would demand a lengthy description of anatomical details that would be out of place in these pages. At one time it was thought these great air-chambers served the purpose of decreasing the weight of the bird during flight; but this is now known to be an incorrect view. They serve to assist respiration, and also, probably, to regulate the temperature of the body.

Concerning Eggs.—Birds, like their cousins the reptiles, and certain lowly mammals, lay eggs. In birds these are always invested in a hard shell, which is commonly coloured, often very beautifully. How this colouring is formed, and how deposited on the shell, we do not yet know, or at least only very partially so.

The number of eggs laid by different species of birds varies greatly. Thus some species lay but one egg, as the Guillemot, for example; some only two, as the Pigeons. Plovers lay four; while the Game-birds lay from twelve to twenty.

When first formed the egg of a bird is extremely small, but during its development there is added to the germ, which is to grow into the chick, a great quantity of yolk, to serve as food for the developing

bird, and outside this food-yolk there is deposited a quantity of "white" of egg, and finally, the whole mass is enclosed within the shell.

Although certain stages of development are passed before the egg is laid, this development soon ceases, and is only resumed as a consequence of the heat generated by the body of the brooding bird.

At hatching, the young birds are in many cases extremely active, following their parents and feeding themselves soon after leaving the shell; in other species, on the other hand, the young leave the shell in a singularly helpless condition—blind and naked—and these have to be very carefully attended by the parents until they are strong enough to fly and fend for themselves.

CHAPTER II

THE OSTRICH-LIKE BIRDS

THE Ostrich tribe are among the most interesting of living birds. And this because, in the first place, they are the survivors of a much more ancient type of birds, extinct long before the advent of man upon the earth ; and in the second, because they have undergone most profound changes in their anatomical structure.

To begin with, all, save the South American Tinamous, have absolutely lost the power of flight, and this at so remote a period that the great keel of the breast-bone, to which we have already referred, has entirely disappeared. But, besides this, the wings have degenerated to a degree met with in no other living birds ; and this is true also of the feathers.

The lowliest member of the Ostrich tribe is the EMEU of Australia. Though, after the African Ostrich, the largest of living birds, it has nothing to recommend it in the way of beauty, being of a dull greyish brown in colour. Its wings are extremely small, and can only be found by diligent hunting among the feathers of the sides of the body. But the Emeu can boast some very handsome relatives. These are the CASSOWARIES of the Papuan Islands—though one species occurs on the mainland of Australia, ranging from Cape York Peninsula to Rockingham Bay. But little is known about these birds, however, in a wild state. When first feathered they are like the Emeu, dull-coloured ; but when fully adult life is attained they assume a rich black dress, and shed the feathers of the head and neck, the bare skin then assuming the most brilliant hues—combinations of blue, green, violet, red, and yellow, according to the species. Further, from the crown of the head there arises a large casque, or helmet,

which, solid though it looks, is really a very frail structure, consisting of a mass of delicate lace-work of bone encased in a thin sheath of horn.

The general appearance of the Cassowary is well seen in the figure on Plate I. fig. 3. The curious spikes projecting from the sides of the body are all that remain of wing-feathers, while the wing as a whole is extremely degenerate and very small. The hand is so reduced that it cannot be bent back at the wrist, as in birds that fly, and the thumb is quite lost, as in the Emeu. The only finger that is left is provided with a long claw, the use of which is unknown. Cassowaries are further remarkable for the fact that the inner toe bears an enormous claw, which is used in fighting—forming indeed a very formidable weapon. Both sexes are coloured alike. Altogether fifteen different species of Cassowaries are known, one of which exceeds the Emeu in size, standing as much as six feet high.

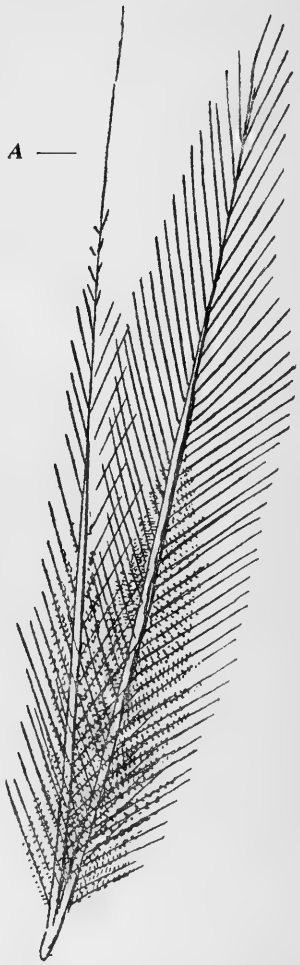

Fig. 11.—Feather of a Cassowary showing the large after-shaft marked A.

The Emeu and Cassowary enjoy the distinction of differing from all other birds in that the feathers are double—that is to say, each has two shafts—and these are of equal length (see fig. 11).

The RHEA, or "Nandu" (Plate I. fig. 2), of South America, though smaller than either the Emeu or the Cassowary, is yet a very large bird. Among other things, it is remarkable for the relatively large size of the wings, which are extended by the birds when running, to act as sails, though they are far too feeble to raise the body off the ground. The loose structure of the feathers, indeed, forms another bar to anything like flight. Both sexes are alike in colour, and there is little difference in the plumage of the young and fully adult birds.

As in the case of the species already mentioned, the males undertake the duties of incubation and the care of the chicks. Several hens combine and lay their eggs together in one nest, so that the male at last is left to brood about twenty eggs. These are of a cream colour, and deeply pitted; thereby they stand in sharp contrast with the eggs of the Emeu and Cassowary, which are of a beautiful green colour.

There are three species of Rhea, the smallest being Darwin's Rhea, distinguished besides by the fact that the legs are feathered much farther down than in the two remaining species.

The AFRICAN OSTRICH (Plate I. fig. 1) is the giant among living birds, the male standing some eight feet high. In that he exceeds the female in size, he differs from the other ostriches so far described, wherein the females are the larger. Furthermore, the African Ostrich differs from all his relatives in that he is conspicuously different from his mate in coloration, having the body clothed in a livery of glossy black, relieved by the pure white of the wing- and tail-feathers, which are the feathers so highly prized for millinery purposes. The head and neck are almost bare of feathers, while the massive legs are absolutely naked.

In the possession of a tail, the African Ostrich is also peculiar among the Ostrich tribe.

As in the Rhea, the wings are of relatively large size, and, though useless for flight, they largely aid him when running, being made to serve as sails. The plumage of the female is of a very sober brown hue.

The Ostrich stands alone among birds in the structure of the foot, which has the toes reduced to two in number, and of these one is so small as to play but a slight part in supporting the body.

The African Ostrich differs from its relatives in that both sexes share the work of incubation; and here the difference in plumage plays an important part. The female, with her dull, sandy-coloured dress, sits by day, so that she is practically invisible when seen against the arid waste chosen for the nesting-site. The male sits by night, when his dark plumage renders him invisible also. Like the Rhea, the Ostrich is polygamous, and several hens lay their eggs together in the same nest. Though four distinct species of Ostrich are

recognised by ornithologists, these do not differ greatly in appearance one from another.

All the Ostrich-like birds so far described agree in that the nestlings are striped with broad bands of white and black, or brown, which run from head to tail. This striping is, however, not equally well marked in all the species. It is best seen in the young of the Emeu, and next of the Cassowary. In the young Rhea, as in the young Cassowary, however, the neck is not striped. In the young Ostrich the neck is striped, but the down of the body shows no stripes, these being obscured by the fact that the tips of the down feathers have become transformed into little horny curls, resembling dark, narrow shavings !

Finally, we come to the APTERYX (Plate I. fig. 4) of New Zealand. There are several different species of Apteryx, that shown in Plate I. fig. 4, being known as Mantell's Apteryx. All, however, agree in being soberly coloured.

While the Apteryx is the smallest of the flightless Ostriches—not exceeding a large domestic fowl in size—it loses nothing in any other way by comparison with its relatives.

Nocturnal in habits, the eyes of the Apteryx are exceedingly small ; but deficient sight is amply compensated by a wonderfully developed sense of smell, in which it exceeds all other living birds. But besides this, the region of the face in front of the eyes is provided with long hair-like feathers, which probably serve the purpose of " feelers," like the " whiskers " of the cat. This bird is also remarkable for the fact that its nostrils are placed at the extreme tip of its beak, and here again it differs from all other birds. This curious position enables the bird to detect its prey, which consists largely of worms. These are discovered by thrusting the beak down into the soil, sniffing the while for traces of the whereabouts of the desired dainties.

The wings of the Apteryx are reduced to the merest vestiges, yet, as in the case of the other Ostriches, a large claw is retained on the tip of the only finger that remains.

Though silent by day, the Apteryx is by no means so by night, being able to give forth the most piercing squeals, which can be heard for long distances. In this way, doubtless, it finds its mate.

The list of the peculiarities of the Apteryx is not yet exhausted ; for it is remarkable for the relatively enormous size of its egg, which, in proportion to the size of the bird, exceeds all other eggs. Only one egg is laid in any one season. Within a very few years the Apteryx will probably be as extinct as the Dodo, and this owing to the destruction wrought by stoats and weasels which have, most unwisely, been introduced into New Zealand.

CHAPTER III

THE CARINATE OR KEEL-BREASTED BIRDS, AND THEIR CHIEF PECULIARITIES

THE birds to which the rest of this volume is to be devoted all differ from the Ostrich tribe, not only in regard to certain peculiarities in the formation of the skull, but also in that the breast-bone bears a deep plate, or "keel," which runs down the middle of its under

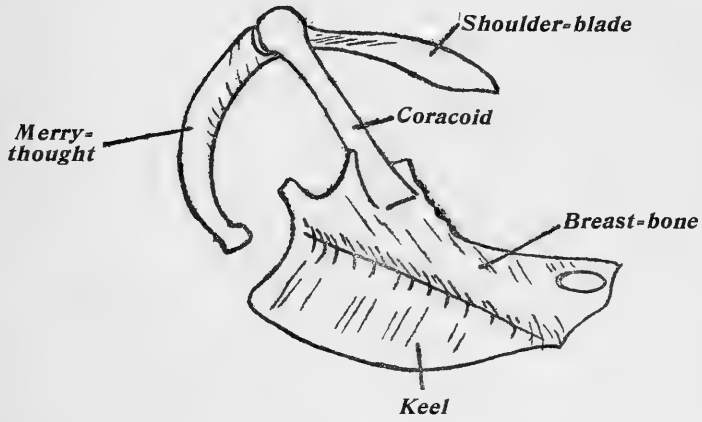

Fig. 12.—The shoulder-girdle of a carinate bird to show the keel of the breast-bone, the large merry-thought, and separate blade-bone.

surface. In addition to this, the bones which are charged with the support of the wings are different, not in kind, but in degree; and this because, with the loss of the power of flight which we remarked in the Ostrich tribe, these "shoulder-girdle" bones, as they are called, degenerated. As a consequence, the blade-bone became immovably fixed to its supporting pillar, the "coracoid"; and

the " furcula," or " merry-thought," disappeared altogether, leaving, at most, but slight traces of its former existence in the Emeus. But with the flying birds the blade-bone is joined to the coracoid by elastic ligaments, and the furcula, or " merry-thought," is well developed.

There are certain exceptions to this rule, however ; and these occur in the case of some species which have, like the Ostriches, lost the power of flight. Herein the keel of the breast-bone has become greatly reduced, while some birds which yet retain the power of flight have either a very imperfect merry-thought or none at all.

Flying birds further differ from the Ostrich tribe in that their feathers are more perfectly developed—they only, in short, possess typical feathers. What are the distinctive characters of these have been already described in the introductory chapter.

Birds, like all other living things, compete one with another for food ; and hence a given area of ground can support only a limited number of birds. All above the number which can find support in this area must either starve or seek fresh feeding-grounds, or contrive to find other kinds of food in the congested area. And it is this struggle to live which has brought about the marvellous variety in the forms of birds which this book illustrates. For as new kinds of food and new methods of feeding were adopted, so slow changes of shape in body, beak, wings, and feet came into being. These changes of shape came about through the process known as selection. That is to say, birds which, by some peculiarity in their structure, found themselves able to capture and thrive upon the flesh of other animals, including also other birds, went on competing among themselves for this particular kind of food, and those which were best endowed—that is to say, those which by their longer wings or sharper beak and claws, or by their ability to swim and occasionally even to dive—gradually crowded out their less fortunate fellows. As time passed, the peculiar characters and qualities which originally gained for them the superiority over their neighbours went on increasing, because the competition still continued, being rendered, indeed, the more severe because carried on between fewer rivals—but rivals almost equally well fitted for the struggle. And in this way, then, in course of time, by slow degrees, the various forms of birds have come into being.

To-day, as a result, we find Diving-birds and Tree-climbers, Hawks and Long-legged Waders, and so on.

These different kinds of birds we group together in different assemblages, which are known as "Orders," and these are further sub-divided into Sub-orders, Families, and Genera, till finally we come to species. In this way we can sort out and bracket together all birds according to their relationship one to another.

While some Orders are made up of birds which have retained a relatively large number of archaic characters, and hence are said to be primitive, others have changed their structure very considerably, showing many signs of descent from more modified, more changed forms, and these are accordingly to be regarded as higher in the scale of evolution. We shall endeavour to express these degrees of development by working upwards from the lowest, or more primitive, types to the highest, or latest evolved forms. The lowest of all, the Ostrich tribe, we have already surveyed. The remaining types are now to be traced out.

CHAPTER IV

THE DIVING-BIRDS, PETRELS, AND PENGUINS

Orders—PYGOPODES, TUBINARES, AND IMPENNES

THE birds which form the subject of this chapter are all aquatic in their habits, and feed upon fish.

THE DIVING-BIRDS

These are divided into two groups : Sea Divers, which are known to American Naturalists as Loons, and Fresh-water Divers, or Grebes.

The largest of the Sea Divers is the GREAT NORTHERN DIVER, Plate II. fig. 1. This bird, which is a winter visitant to Great Britain, breeds in Iceland, Greenland, and the Fur Countries, as far west as the Great Slave Lake. It lays but two eggs, and as a nest-builder is by no means skilled.

In the British Islands the Great Northern Diver is far less common than the Red- and Black-throated Divers, which breed annually on many of the lochs of Scotland. In Ireland the Black-throated Diver is rarely met with, and the Red-throated only occasionally breeds there.

Though these birds are commonly called Sea Divers, it must be remarked that they show a great preference for fresh water. Here they breed, and here they pass the summer months. During the winter, however, they retreat to the sea, and there disperse themselves all along our coasts. This migration is probably due to the necessity of keeping to open water, for, being entirely dependent on fish for their subsistence, severe frosts immediately cut off their supplies of fresh-water fishes in their chosen haunts.

Of the Fresh-water Divers, or Grebes, two species are figured here, the GREAT CRESTED GREBE (Plate II. fig. 2) and the LITTLE GREBE, or DAB-CHICK (Plate II. fig. 7). The former is a very handsome bird, and at one time was much persecuted for the sake of its breast-feathers, which were made up by milliners into muffs and other ornamental articles of dress. This bird is remarkable for the wonderful frill which surrounds the head. This frill can be raised or depressed at the pleasure of the bird, and is of a rich, dark, chestnut colour, shading at the edges into a very dark brown. In addition, long "horns," or tufts of feathers, of a rich, dark brown spring from the crown of the head. Both sexes are similarly adorned, but in the males these ornaments are more developed.

The DAB-CHICK, or LITTLE GREBE (Plate II. fig. 7), is a much smaller bird, which in summer has the cheeks, throat, and sides of the neck of a rich chestnut, but these colours give place to a silvery white in winter. It ranges over Europe, Africa, and Asia, extending from the Malay countries into North Australia.

While the Sea Divers have fully webbed feet, the Grebes simply have the toes provided with broad lobes. But both Grebes and Divers are experts at progression under water. So completely have the Sea Divers become modified by this mode of life, that the legs have become shifted to the extreme hinder end of the body; as a consequence, they cannot walk when on land. The Grebes, however, can do so.

THE PETRELS, OR TUBE-NOSED BIRDS (Plate III.).

The Petrels are strictly sea-birds, and all are peculiar in that the nostrils open, either in the form of a pair of tubes, one on each side of the beak, or into a cave-like cavity on the top of the beak: hence the name, "tube-nosed" birds.

Of the many different kinds of Petrels, three species are figured here; and of these by far the most interesting is the Albatross, which is one of the largest birds that fly. The BLACK-BROWED ALBATROSS (Plate III. fig. 8) has occurred in British waters, and hence is reckoned a British bird; it has also occurred in California, though its real home is in the Southern Oceans. Albatrosses commonly breed in large colonies. In the Island of Laysan, in the Pacific Ocean, thousands

and thousands can be seen, each brooding its single egg. The nestling is covered with white down of extraordinary length, and is further remarkable for the great length of time during which it remains in the nest.

Albatrosses, when love-making, behave somewhat strangely. Standing face to face, they start nodding and bowing vigorously, then rub their beaks together, uttering a whistling cry. After this they begin shaking their heads and snapping their bills with marvellous rapidity, occasionally lifting one wing, straightening themselves out, and blowing out their breasts ; then they put the beak under their wings or toss it in the air with a groaning scream, walking round each other meanwhile. And these strange evolutions sometimes last for fifteen minutes at a time !

The MANX SHEARWATER (Plate III. fig. 1) may be regarded as a typical Petrel. Though fairly common as a British bird, it is rare in American waters. The legs, we may remark, have been drawn by our artist a trifle too long.

In the Hebrides this bird breeds in considerable numbers, though in some of the islands, curiously enough, it has been ousted by the Puffin—a much smaller bird, but very pugnacious. On Pabbay, for instance, this Petrel was at one time very common, so much so that the young thereof were so highly esteemed that a barrel of them formed part of the rent paid by each crofter in Mingalay to the Macneils of Barra. About a hundred years ago, however, the Puffins began to increase very much, and drove the Shearwaters from the holes which they occupied in the cliffs, and so completely supplanted them that only a few pairs now breed in Pabbay.

The young of this bird remain in the nest-burrow until long after they are fully fledged, becoming, as a consequence, enormously fat.

Perhaps the most interesting of all the Petrels is the little Storm-petrel, a kind very closely resembling LEACH'S FORK-TAILED PETREL (Plate III. fig. 2), which is met with quite commonly both in British and American waters.

The so-called " Cape Pigeon," which always excites such interest at sea, is a species of Petrel.

As a rule, Petrels are dark coloured above and white below ; but one species, the beautiful Snow Petrel of the icy regions of the Antarctic,

Fig. 1.
Great northern diver
(Colymbus glacialis).

Fig. 2.
Great crested Grebe
(Podicipes cristatus).

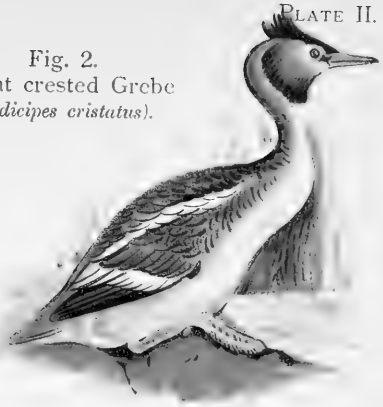

Fig. 3. Puffin
(Fratercula arctica).

Fig. 6. Little Penguin
(Eudyptula minor).

Fig. 8. King Penguin
(Aptenodytes patagonica).

Fig. 4.
Little Auk
(Mergulus alle).

Fig. 7. Dabchick
(Tachybaptes fluviatilis).

Fig. 5.
Guillemot
(Uria troile).

Fig. 9. Razor-bill
(Alca torda).

is pure white ; and the Great, or Giant, Petrel when it wanders to the far south also becomes white.

Petrels were supposed by the older naturalists to be nearly related to the Seagulls, which they closely resemble. As a matter of fact, this resemblance is purely superficial, and is due to their similar mode of life.

THE PENGUINS

The Penguins are surely the most remarkable of all the " carinate " birds, and this because they have become so completely changed to fit them for an aquatic life. No other living bird has become so profoundly modified. Though the bird-like shape is retained, the wings have become transformed into paddles, recalling those of whales ; and with these paddles Penguins propel themselves through the water after the fashion of a bird flying through the air.

These birds are absolutely confined to the southern regions of the world, though one species, the Cape Penguin, or Black-footed Penguin (*Spheniscus demersus*), ranges as far north as the Cape of Good Hope.

In size they vary enormously, the largest species being represented by the KING PENGUIN (Plate II. fig. 8) and the Emperor Penguin, standing about four feet high ; while the smallest is the LITTLE PENGUIN (Plate II. fig. 6) of New Zealand, not larger than a small duck.

The King and the Emperor Penguins are found only in the inhospitable regions of the Antarctic ; they live, in short, in a region of perpetual ice and snow. They lay but one egg during the year, and this is most zealously guarded. To protect it from the ice, it is placed, as soon as laid, upon the back of the feet, and covered by the feathers of the lower part of the abdomen. Here it is carefully brooded by each parent in turn till the young is hatched ; when this is similarly nursed. But though so similar in their nursing habits, the young birds of the two species are very unlike. Thus the young King Penguin is covered in long, hair-like, tawny-coloured down, while the young Emperor, as befits him, is clad in a pure white down, excepting only some black markings on the head.

Other species of Penguins, of which there are several, build nests either on the open ground or under ledges of rock.

Penguins, from the curious transformation of their wings, are quite unable to fly. They are also quite unable to breathe through their nostrils, and this because these have become completely closed up.

The Penguins have no very near relatives among living birds, but they stand nearest to the Diving-birds, which, however, they far surpass, both in their ability to walk when on land, and in their wonderful swimming and diving powers.

CHAPTER V

THE TOTIPALMATE BIRDS, HERONS, STORKS, AND FLAMINGOES

Orders—STEGANOPODES, CICONIÆ, AND PHŒNICOPTERI

THE birds which form the subject of this chapter comprise a number of distinct groups which, at first sight, seem perhaps to have but little in common, for, in the first place, while some are web-footed, others are not. As a matter of fact, however, a study of their anatomy shows that they are all closely related one to another.

THE TOTIPALMATE BIRDS

The birds which are known as the Totipalmate, or Steganopodous, birds were grouped together by the older naturalists because they differed from all other web-footed birds in that all the four toes are united by a continuous web, whereas in all other web-footed birds the hind-toe, when present, is free. The labours of later workers have shown that this association was justified.

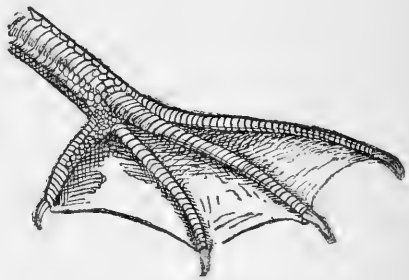

Fig. 13.—Foot of a Cormorant, to show the totipalmate condition—all four toes united in a common web.

The best known of these Totipalmate birds are the Cormorants and Gannets.

The COMMON CORMORANT (Plate III. fig. 4) is a bird which enjoys a very wide distribution over the earth's surface, being common all

over Europe, and in America occurring along the Atlantic coast from Hudson Bay to New Jersey. It is a rather large bird, being about three feet long, of a wonderful bottle-green colour, and having rather evil-looking emerald-green eyes. Its plumage is still further remarkable, in that the sides of the neck are marked by long and peculiar hair-like feathers, white in colour ; while a similar white patch occurs on the thigh. This last, however, is worn only during the summer months.

The nestlings of the Cormorant are very ugly, and covered with a short black down. This is succeeded by a brown plumage, and at this time the eyes are also brown. Not until they are adult is the dark dress assumed.

The Cormorant is an expert diver, and lives upon fish, which it pursues under water. The wonderful skill displayed in this pursuit is turned to good account by the Chinese and Japanese, who keep these birds and train them to catch fish. By the ingenious device of placing an india-rubber ring around the neck, their masters prevent the birds from swallowing their captures, and compel them to bring each fish as it is caught to the raft from which the fishing is carried on. From the time of the Stuart sovereigns until quite recently Cormorant fishing of this kind was carried on as a sport in England.

There are several species of Cormorants, the smallest being but 22 inches long. This species is found in Central and South Europe, North Africa, and South-west and Central Asia. The largest species, known as Harris's Cormorant, is nearly extinct, and is found only on one of the Galapagos Islands, off the coast of South America. It is much larger than the Common Cormorant, but has quite lost the power of flight, and with it the keel of the breast-bone.

Very nearly related to the Cormorants is a remarkable bird known as the DARTER (Plate III. fig. 9). From the Cormorants it differs chiefly in the great length and slenderness of the neck, on which account it is also known as the Snake-bird. The beak of the Darter is, however, quite unlike that of the Cormorant, being very sharply pointed, while its edges are armed with fine needle-like spines. When fishing, the Darter spears his victim on this beak, and brings it wriggling to the surface, when it is tossed up and swallowed.

The subject of our illustration (Plate III. fig. 9) is a native of

Fig. 1.
Manx Shear-water
(Puffinus anglorum).

Fig. 2.
Leach's Fork-tailed Petrel
(Oceanodroma leucorrhoa).

Fig. 5.
Tropic bird
(Phaëthon aethereus).

Fig. 3. Gannet
(Sula bassana).

Fig. 4.
Cormorant
(Phalacrocorax carbo).

Fig. 6. Frigate-bird
(Fregata aquila).

Fig. 7. White Pelican
(Pelecanus onocrotalus).

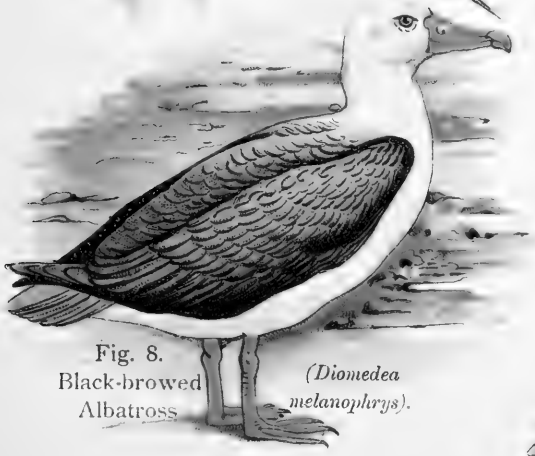

Fig. 8.
Black-browed
Albatross
(Diomedea melanophrys).

Fig. 9. Darter *(Plotus anhinga).*

tropical and sub-tropical America, ranging northwards to West Mexico and South Carolina; but Darters, of different species, are met with in other parts of the world. Like the Cormorants, Darters, in the summer, have the neck adorned with long, white, hair-like feathers, known as filo-plumes. The Darters are further remarkable for the fact that the tail-feathers are curiously corrugated in a way recalling the sheets of corrugated iron used for roofing and other purposes.

Though Darters occur on the sea-coasts, it is more strictly a river bird.

As in the Cormorants, the eggs of the Darter are peculiar in that they are covered with a thin layer of chalk, which, when scraped away, reveals a shell of a very delicate greenish-blue colour.

The GANNETS, though closely related to the Cormorants and Darters, differ much therefrom, not only in shape and coloration, but also in their method of fishing, since they capture their prey, not by pursuit under water, but by a sudden plunge from a great height in the air.

The COMMON GANNET (Plate III. fig. 3), also known as the Solan Goose, is a resident within British waters, and breeds in considerable numbers on the Bass Rock and Ailsa Craig, islands on the east and west coasts of Scotland. Smaller colonies are to be found off the English and Irish coasts. From the British Islands it extends to Iceland, and down the American Coast to Nova Scotia.

While the adult bird in both sexes is pure white—save the quills, which are black, and a rich buff tinge over the head and neck—the young birds are of a blackish ash colour, flecked with white. Year by year, at each successive moult, they grow paler, until, at the sixth year, they assume the fully adult dress.

Altogether, about nine distinct species of Gannets are known. All are remarkable for the fact that between the skin and the body there is found a wonderful system of air-cells, serving to break the force of the impact with the water which occurs when the birds dive after their food. This, as we have already remarked, they do from a great height.

Like the Cormorants and Darters and also the Penguins, the Gannets have no external nostrils, but breathe only through the mouth.

THE PELICANS, TROPIC BIRDS, AND FRIGATE BIRDS

The Pelicans, Tropic and Frigate birds are each in their way very remarkable types, and all are nearly related one to another and the Cormorants and Gannets.

The WHITE PELICAN (Plate III. fig. 7) is a native of Southern Europe and Africa, ranging eastwards into Northern India. Altogether nine species are known, of which three are American—the Brown, Saw-billed, and Rough-billed Pelicans. The last named, a North American species, is the most remarkable of all, and this because, in the nesting-season, the upper surface of the beak bears a curious horny plate, which late in the year drops off, to be renewed again in the succeeding summer.

The huge pouch of skin which hangs down from the lower jaw of the Pelicans is too well known to need description. In this receptacle fish are caught. In fishing, these birds will often combine, forming a half-circle in the water, and driving the fish before them until they get them "rounded up," as it were, against the bank of the river or lake which is the scene of their hunting, when the pouches are speedily filled! When not in use, the skin of this pouch is drawn up so as to be hardly noticeable.

Pelicans not only swim well, but they can also dive, while on the wing they have few rivals.

The FRIGATE, or MAN-OF-WAR BIRD (Plate III. fig. 6), is met with throughout the tropical regions of the world, and has even strayed so far north as Nova Scotia. It is a remarkable bird in many ways. Spending the greater part of its life on the wing, it has but little use for legs, and as a consequence it has acquired the distinction of having the smallest feet, for its size, of any living bird. Feeding upon squids, small crabs, flying fish, and young turtles when they come in their way, these Frigate Birds yet derive no small part of their food by robbing others. Their victims are chiefly Terns and Gannets, which, returning home with full crops, are chased and made to disgorge their captures. Before the coveted morsel has reached the sea again, it is caught up by these unscrupulous highwaymen and promptly swallowed!

During the nesting-season the males develop beneath the beak

a great pouch of a brilliant red colour. This can be inflated, at the will of the bird, until it rivals the rest of the body in size! "A dozen or more of these birds sitting in a tree," says Dr. Andrews, of the British Museum, "with outstretched, drooping wings, and this great scarlet bladder under their heads, is a most remarkable sight." "When a hen bird," he continues, "approaches the tree, the males utter a peculiar cry, a sort of 'wow-wow-wow-wow,' and clatter their beaks like castanets, at the same time shaking the wings."

The Tropic Bird, or Boatswain Bird (Plate III. fig. 5), is a native of the tropical portions of the Pacific and Atlantic Oceans, and measures about 40 inches in length; but this includes the long tail, which has a length of about 26 inches.

Altogether six species are known, of which three are American. Tropic Birds are true denizens of the ocean, often being met with many hundreds of miles from the land. Their flight is rapid and sweeping. Like the Gannet, they procure their prey by diving, often from an immense height, in the air. On land, as might be expected, they are greatly at a disadvantage, and walk with a shuffling gait. Though the majority of the species are white, with black pencillings, one is remarkable for the exquisite orange colour of its plumage.

THE HERON TRIBE

While the birds which we have just described are all remarkable for the shortness of their legs, the remaining types, to the description of which we now pass, are as conspicuous from the great length of their legs. In the matter of the shape of the beak they also differ, for this is spear-shaped, though in this particular the Gannets and Darters, and to a less extent the Tropic Birds, also agree.

The difference in the length of the leg is explained by the fact that the Herons and their near relations, which we shall consider presently, catch their prey by wading in shallow water, whereas the birds which we have just described either procure their prey under water, or capture it by plunging from a height.

The Common Heron (Plate IV. fig. 4) is still to be met with in Great Britain, on the streams and mud flats of secluded neighbourhoods; but it is a very wary bird, and must be approached with great caution. In the days of feudal England this bird was most strictly

protected on account of the sport it afforded in Falconry. To-day it is subjected to a ruthless persecution wherever trout streams abound on account of the heavy toll it is supposed to levy on these sacred fish ; so that the wonderful sight of a " heronry," as a nesting-colony of these birds is called, is becoming more and more rare. But the herons, even in trout streams, are by no means such robbers as they are supposed to be by those who shoot them down, and trap them by all manner of barbarous devices. For these birds subsist largely on water-voles, frogs, and eels.

Their nests, constructed of sticks, are placed in the tops of high trees, though when these are wanting they will build upon the ground.

The Common Heron enjoys a wide range, occurring over the greater part of Europe and Asia below lat. 60° N., and most parts of Africa and Madagascar. Eastwards it extends to the Malay Islands and Australia.

In South America there occurs a bird which in general appearance closely resembles the Common Heron. This is the Blue, or Cocoi, Heron. But a much more remarkable species of Heron occurs in North America. This is the Little Blue Heron. Though, as its name implies, a much smaller bird than the Common Heron, it is peculiar on account of the fact that it is met with under two distinct forms, one blue and one white, both forms being not infrequently found in the same nest.

The small birds known as " Night Herons " are near allies of the Common Heron, and are met with in Europe and America.

Among the Heron tribe are certain species which possess, in a remarkable degree, the " fatal gift of beauty." These are the " Egrets." The chiefest among these are the Great White Egret (Plate IV. fig. 5) and the American Egret. The former occurs in Southern Europe, east to Central Asia and south to Africa, the Indian Peninsular and the Burmese countries, and is the largest of the Egrets. The American species is a smaller bird, and burdened by the scientists with the formidable Latin name *Lecophoyx candidissima.* A native of the temperate and tropical regions of America, from the Northern United States to Chili, this bird, like its white relatives in other parts of the world, has for many years been made the subject of the most atrocious persecution. And this for the sake of the wonderfully beautiful

plumes which grow from the back of both males and females during the breeding-season. These feathers form the ghastly trophies which thoughtless women wear in their hats, and to procure which the most abominable cruelties have been perpetrated. Though the sickening details of the slaughter of these birds have been published broadcast, the use of these feathers for decorative purposes unhappily still continues, though since Her Majesty the Queen has set the seal of her disapproval in their use the practice may slowly die out. For every pair of adult birds killed, one pair of nestlings dies a lingering death from starvation. Time was when these beautiful birds abounded in the Florida Keys, to-day this region is desolate. The same course of brutality has been followed, with scarcely less deplorable results, with other species in other parts of the world.

From the Herons and Egrets we pass to the Bitterns. Of the last-named group the best known perhaps is the species generally referred to as the COMMON BITTERN (Plate IV. fig. 6). This bird is remarkable for the curious booming noise which it makes as the shades of evening are closing in. Like the Herons, it is a bird which delights in desolate places—great swamps and reed-beds. There was a time when the Bittern was to be met with commonly in Great Britain, but drainage and that pest the "collector" have done their worst, so that, at most, but a few stragglers are now to be met with in our islands, and these are always promptly shot down.

The Bittern is remarkable for the wonderful way in which its plumage harmonises with its surroundings; and, as if aware of this, the bird seeks safety in moments of danger, not by flight, but by sitting close, with upstretched neck, and beak pointing skywards, among the reeds. So closely does it then blend with the tangle around it, that detection is well-nigh impossible. The ordinary resting attitude of this bird is that depicted in Plate IV. fig. 6. Another unusual feature about the Bittern is the wide fringe of long feathers which runs down the front of the neck. These are so long that they, when extended, give this region an enormous appearance. When depressed, they meet behind, and on this account the back of the neck is clothed only in short down.

But the Bitterns and Herons have attained a certain amount of notoriety from the fact that the middle claw bears along its inner

edge a comb-like fringe, while the breast and thighs bear patches of very remarkable feathers known as powder-down. These feathers break up in the form of an exceedingly fine powder, but what purpose this powder serves is unknown.

THE STORKS, SPOONBILLS, AND IBISES

Though very like the Herons in habits and general shape, the Storks differ therefrom in many anatomical characters. The best-known species is the WHITE STORK (Plate IV. fig. 2) of Europe; and this largely because of the prominent part it has played in folk-lore, as well as from the veneration in which it is commonly held, especially in Holland.

The Adjutant Storks, which occur in India and Africa, are the birds which furnish the feathers known as "Marabou" plumes. The AFRICAN ADJUTANT STORK (Plate IV. fig. 7) is known to the Arabs as "The Father of the Leather Bottle," from the curious bag which hangs down in front of the neck, and which can be filled and emptied of air at the will of the bird. The American Jabiru Stork is nearly related to the Adjutants.

The SPOONBILL (Plate IV. fig. 3) is a bird which a few centuries ago bred commonly in marshy districts in Great Britain, but is now, largely owing to drainage, reduced to the rank of an accidental visitor, and the same fate is overtaking it in Holland. This bird derives its name from the curiously spoon-like shape of the beak. The Roseate Spoonbill of America is a closely related species, but a more brightly coloured bird.

The Ibises, though they bear a superficial resemblance to the birds known as Curlews, really belong to the Stork tribe, and are most nearly related to the Spoonbills. The SACRED IBIS (Plate IV. fig. 8) is the bird which was worshipped, and after death embalmed, by the ancient Egyptians. The Glossy Ibis was, till comparatively recent times, a common bird in Great Britain. Perhaps the most beautiful of all the Ibises is the Scarlet Ibis of tropical America, a bird which, however, soon loses its glorious hues in confinement, though it has recently been found that, with judicious feeding, this loss of colour can be almost, if not entirely, prevented.

Fig. 1. Flamingo
(Phoenicopterus roseus).

Fig. 2.
White Stork
(Ciconia alba).

Fig. 3.
Spoonbill
(Platalea leucorodia).

Fig. 4.
Common
Heron
(Ardea cinerea).

Fig. 5.
Great white Egret
(Herodias alba).

Fig. 6. Bittern
(Botaurus stellaris).

Fig. 7. African
Adjutant Stork
(Leptoptilus crumenifer).

Fig. 8. Sacred Ibis *(Ibis aethiopica).*

Fig. 9.
Crowned
Crane
(Balearica pavonina).

THE FLAMINGOES

As to the exact relationships of the Flamingoes a great many opinions have been expressed. Some authorities regard them as long-legged Geese, others as Storks with geese-like beaks; and probably the latter view is nearer the truth. In the external shape of this beak the Flamingo is unique, the upper and lower jaws being bent sharply downwards in the middle. But along their inner edges is a curious fringe of horny plates, like that found in Ducks and Geese. Hence the supposed relationship to these birds.

The Flamingoes build very wonderful nests of mud, in swamps. And it was generally supposed, by the older naturalists, that the bird, when sitting on its eggs, sat astride the nest—an idea which is now quite exploded.

The EUROPEAN FLAMINGO (Plate IV. fig. 1) occasionally strays into Great Britain. In the salt-water lagoons of the south of France and Spain it breeds in great numbers.

About seven species of Flamingo are known, and no less than four of these are American.

CHAPTER VI

THE DUCKS, GEESE, AND SWANS

Order—ANSERES

THE Ducks, Geese, and Swans form a well-defined order of birds, which appear to be related on the one hand to the Totipalmate birds and Storks, and on the other, some believe, to the birds of prey.

All are aquatic in their habits, short-legged and web-footed, and all have very large, thick, fleshy tongues.

Unlike the Totipalmate birds and Storks, their nestlings leave the egg in a very forward state, so that they can run and swim almost immediately after hatching.

The "Saw-billed" Ducks are remarkable for the fact that the edges of the beak are armed with sharp, conical, horny, tooth-like spines, admirably adapted for the capture of the slippery fish on which these birds live.

The GOOSANDER (Plate V. fig. 2) and the SMEW (Plate V. fig. 5) are two very typical samples of Ducks of this type, and both are common British birds. In North America a Goosander is found which differs but little from the British species.

The two next species possess a beak of more normal type, in so far as its armature is concerned; in its general shape, however, this beak is peculiar. These are the Velvet Scoter and the Eider-duck.

The VELVET SCOTER (Plate V. fig. 7) is a strictly marine species, which is not infrequently met with along the British coast in autumn and winter. It feeds largely on shell-fish, which it obtains by diving. In colour it is of a rich velvety black, relieved only by a white patch on the head and wing and the brilliant orange of the beak and legs.

A. Male. B. Female.

Fig. 1. Eider Duck
(Somateria mollissima).

Fig. 2. Goosander
(Mergus merganser).

Fig. 3. Long-tailed Duck *(Harelda glacialis).*

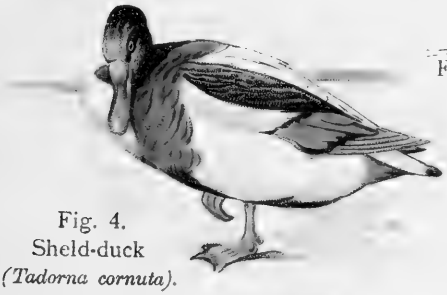

Fig. 4.
Sheld-duck
(Tadorna cornuta).

Fig. 5. Smew
(Mergus albellus).

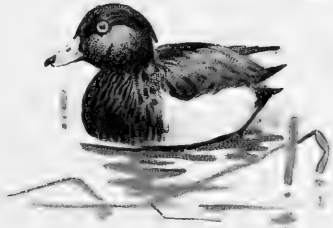

Fig. 6. Tufted Duck *(Fuligula cristata).*

Fig. 7. Velvet Scoter
(Oedemia fusca).

Fig. 8. Golden-Eye *(Clangula glaucion).*

In North America there is found a smaller species closely resembling this bird.

The EIDER-DUCK (Plate V. figs. 1 a, b) is perhaps, in name at any rate, one of the best known of all the Duck tribe, and this on account of the fact that its down—bleached white—is so much in demand for domestic purposes. This down is obtained by robbing the nest-material of the breeding birds. It is plucked by the female from her breast to serve as a lining for the nest and a covering for the eggs. As is the case of so many of the Ducks, the female is much more soberly clad than her mate ; which is one of the most beautiful of all the Ducks. The American Eider-duck, though a distinct species, differs but little in appearance from the British species.

The LONG-TAILED DUCK (Plate V. fig. 3) is a relative of the Eider-duck, though a much less handsome bird. Nevertheless, it has distinct claims to beauty, the white plumage of the male being relieved by black, and washes of dark brown and buff.

This bird breeds in the northern limits of Scotland, and is also well known in America, where it not infrequently passes under the name of the " South Southerly " and " Old Squaw," the latter name having been bestowed on account of its noisiness when a large number are gathered together. Apart from its peculiar coloration, the long tail of the bird makes it easy to distinguish.

The TUFTED DUCK (Plate V. fig. 6) and the GOLDEN EYE (Plate V. fig. 8) are both well-known British birds, being especially common during the winter months. The Golden Eye, indeed, occurs with us at no other time ; but the Tufted Duck, on the other hand, is to be found the year round, breeding in considerable numbers in the Midland counties.

While the Golden Eye is represented in America by a bird identical with the British race in all except size—the British Bird being much smaller—the Tufted Duck is unknown as an American bird.

The Golden Eye is peculiar among the Ducks, in selecting a hole in a tree in which to lay its eggs.

While the Ducks so far described are commonly known as DIVING DUCKS, the species now to be described are similarly known as Surface-feeding or Fresh-water Ducks ; though it must be remarked

that some of the Diving Ducks also show a marked preference for inland waters.

Of the Fresh-water Ducks the best-known examples are the MALLARD, the TEAL, the WIGEON, and the PINTAIL (Plate VI. figs. 6, 5, 7, 8).

These are all species conspicuous for their beauty, though this, as with the Ducks already described, is confined to the males, the females being very dull-coloured birds.

While the Mallard is met with in some numbers in America, this is not the case with the Teal, Wigeon, and Pintail, which occur only as stragglers. But the place of the Wigeon is taken by the American Wigeon, and of the Teal by the American Green-winged Teal—birds which resemble the British species fairly closely.

The SHELDRAKE, or SHELD-DUCK (Plate V. fig. 4), is a bird which is interesting in more ways than one. To begin with, its plumage is remarkable for its strongly contrasted colours—pure white relieved by broad bands of bright chestnut, and rich metallic blue-blacks and greens; while the beak is of a wonderful cherry-colour, the legs a delicate pink. Then both sexes are coloured alike, though the female is not quite so vivid in her hues. In all the other Ducks, it will be remembered, the female wears a very dull dress; and this, for a time, is assumed by the males also, when they are said to go into "eclipse." This "eclipse" plumage is worn for some six or eight weeks, during which time the annual moult, or renewal of the quills, is taking place. For the Ducks, at this time, shed their quills—not in pairs, as most other birds do, and so preserve the power of flight, but all at once. Hence they are compelled to seek safety from enemies by hiding—a device which is eminently successful, because the sober hues of the female dress harmonise perfectly with the birds' surroundings.

The Sheldrakes have no "eclipse" dress, the female at the time being engaged in sitting on her eggs, concealed in a burrow carved out of some sand-bank, while her mate seeks safety at sea, or crouches among the vegetation near his mate.

But the Sheldrakes are further remarkable in that they serve as a connecting-link between the Ducks and the Geese.

The Common Sheldrake, or "Burrow-duck," is a well-known

Fig. 1. Grey-lag-goose
(Anser cinereus).

Fig. 2. Brent Goose *(Bernicla brenta).*

Fig. 3. Snow Goose
(Chen hyperboreus).

Fig. 4. Mute Swan *(Cygnus olor).*

Fig. 5.
Common Teal
(Nettion crecca).

Fig. 6.
Mallard
(Anas boschas).

Fig. 7. Wigeon *(Mareca penelope).*

Fig. 8. Pintail *(Dafila acuta).*

British bird, and is no less frequently met with over a large part of Europe, extending thence into Asia, and as far east as Japan.

We pass now to the TRUE GEESE, wherein, as with the Sheldrake, both sexes are coloured alike. Though as a rule not very brightly coloured, some species are conspicuously so. What we may call the "typical" Goose is represented by the "Grey Lag" Goose.

The GREY LAG GOOSE (Plate VI. fig. 1) is a most interesting bird, because, probably, from this species our domesticated races of Geese have had their origin. It owes its name, "Lag Goose," to the fact that it used to remain behind, or "lag" behind, to breed in the English fens, when all its relatives had betaken themselves to more northerly regions for this purpose.

The BRENT GOOSE (Plate VI. fig. 2) represents the most abundant and generally distributed of the British Geese, and is especially common on the northern coasts. This bird also occurs throughout Arctic America, eastward of Alaska. On the Pacific side of North America, however, its place is taken by a closely allied species, wherein the white patch of the neck—which distinguishes *Bernicla brenta*—extends to form a complete ring.

A much handsomer Goose is the SNOW GOOSE (Plate VI. fig. 3), wherein the plumage is snow-white, relieved by the black quill-feathers of the wings, while the legs and feet are bright red. It is a very rare bird in Great Britain, its home being North America.

The SWANS are represented by several species, of which the best known in Britain is the MUTE SWAN (Plate VI. fig. 4), a bird too well known to need description. Except the Australian Swan, which is black, and the South American Black-necked Swan, all the Swans are pure white in plumage when adult.

CHAPTER VII

THE BIRDS OF PREY—SECRETARY-BIRD, EAGLES, BUZZARDS, HAWKS, KITES, VULTURES, AND FALCONS

Order—ACCIPITRES

AMONG the Birds of Prey the older naturalists always included the Owls, which they distinguished as the "Nocturnal," or Night-flying, Birds of Prey. But it is now known that the Owls, though in many respects closely resembling the birds to be described in this chapter, are yet members of a very different group. They are, in short, nearly related to the Nightjars.

The purpose of classification, it must be remembered, is not so much to bring together those birds which are externally similar, as those which are related one to another. Unrelated birds may, and often do, resemble one another, because they lead similar lives, and thus have become slowly changed till they assume a common likeness; while birds, on the other hand, which are really closely related, come to assume very different shapes, and this because their mode of life is different.

The relationship of birds one to another is to-day determined rather by anatomical structure than by external form. And it is on these grounds that anatomists have separated the Owls from the Eagle tribe.

The hooked beaks, sharp claws, and upright carriage of the body, which distinguish both the Owls and the Day-flying Birds of Prey, or "Accipitres," owe their being to the same causes. That is to say, when the ancestors of these birds began preying on their neighbours, they did it because they were stronger, and had heavier, sharper

Fig. 1. Sparrow-hawk *(Accipiter nisus).*

Fig. 2. Kestrel *(Falco tinnunculus).*

Fig. 3. Secretary-bird *(Serpentarius secretarius).*

Fig. 4. Gos-hawk *(Astur palumbarius).*

Fig. 5. Hen Harrier *(Circus cyaneus).*

Fig. 6. Kite *(Milvus ictinus).*

Fig. 7. Common Buzzard *(Buteo vulgaris).*

beaks, and longer, sharper claws than their victims. As time went on, the descendants of these marauders gradually improved these weapons, and this improvement is going on even now.

One of the most remarkable of the Accipitres is the "SECRETARY-BIRD" (Plate VII. fig. 3), and this because of the great length of the legs, the long tail, and the long feathers which spring from the head. These last, from their fanciful resemblance to the quill pen behind the ear of a secretary, have given the bird its name. A native of South Africa, it is held in high regard from the fact that its favourite food is snakes, many of which are extremely poisonous, and consequently dreaded by all who have to live in this region of the world. The bird attacks and kills these reptiles by pounding them with its feet, using its wings, when necessary, as a shield against bites. It builds a huge nest of sticks, and in this the nestlings remain for as long as six months.

Of the more typical birds of prey the KITE (Plate VII. fig. 6) is certainly one of the most interesting. It was once an extremely common British bird, and nowhere more plentiful than in London, where its numbers excited the comment of all foreigners visiting the city. But this was several hundred years ago, when this bird was valued as a scavenger. Poultry keepers and game preservers have since then waged such a ruthless war on this fine bird that it is now practically extinct as a British bird, only two or three pairs being found breeding—under special protection—in Wales. No bird has a more beautiful flight than the Kite, and its loss is greatly to be deplored. In olden days it was held in high esteem by the falconer, who hunted it with trained Falcons.

The HEN HARRIER (Plate VII. fig. 5) is one of several different species of Harrier once common in Great Britain. To-day, owing to game preservation, it has become practically wiped out. The Harriers are peculiar in that the feathers of the face are arranged almost after the fashion which obtains among the Owls. The Hen-harrier feeds upon mice, water-voles, small birds, and reptiles. The female differs remarkably from the male in colour, being brown above and having the tail banded with five dark bars—hence this sex was at one time regarded as a distinct species, and known as the Ring-tail.

The Gos-hawk (Plate VII. fig. 4), though occasionally to be met with in Great Britain, was apparently at no time a common bird. It is exceedingly powerful, and has the hind-toes armed with claws remarkable for their size and strength. The grip of the foot of this bird is terrible ; thereby it kills its prey. Falconers in olden days held the Gos-hawk in high esteem. It was flown at Hares and Rabbits, as well as Herons, Partridges, Ducks, and other birds, exhibiting remarkable skill in turning swiftly by reason of its relatively short wings and long tail.

The American Gos-hawk closely resembles the British bird, differing chiefly in the under parts, which are freckled rather than barred.

The Sparrow-hawk (Plate VII. fig. 1) is a near relative of the Gos-hawk, but a much smaller bird. In spite of relentless persecution, it may still be called one of the commonest of the British Hawks. Haunting the woodlands, it feeds principally upon small birds. In the days when falconry flourished, this bird was used to take Quails and Partridges, and is still used for this purpose in India and Japan.

While in the Hawk tribe it is usual to find the females larger than the males, this disparity is nowhere so marked as in the Sparrow-hawks—of which there are several species. Further, the sexes differ greatly in colour. The bird figured on Plate VII. is an adult male. The female is much less handsome, lacking the beautiful chestnut colour on the breast.

In Canada and the United States the place of the British Sparrow-hawk is taken by two quite distinct species, one being known as the Sharp-shinned, and the other as Cooper's Hawk ; both, however, bear a very close resemblance to the British Sparrow-hawk. The bird, by the way, known in Canada and the United States as the Sparrow-hawk belongs to quite a different section of the Hawk tribe, as will be shown presently.

We pass now to a brief description of the Buzzards and Eagles, which blend, so to speak, the one into the other.

The Common Buzzard (Plate VII. fig. 7) is happily still to be met with in many parts of Great Britain, though unfortunately it is now a misnomer to call it the "Common" Buzzard. Sixty years

Fig. 1. Osprey
Pandion haliaëtus).

Fig. 2. Greenland Falcon *(Falco candicans).*

Fig. 3. Golden-eagle
(Aquila chrysaëtus).

Fig. 4 White-tailed sea-eagle *(Haliaëtus albicilla).*

Fig. 5. Imperial Eagle *(Aquila heliaca).*

ago it used to breed in Norfolk in some numbers. To-day a few may occasionally be seen in Wales and in the centre and west of Scotland. Game preservation has sealed its doom. The female, which is somewhat larger than her mate, measures about 23 inches in length.

In the matter of plumage this species varies greatly, at least in so far as the nature of the markings is concerned, some birds being very dark, others almost cream-coloured, while the markings on the breast often form a T-shaped pattern.

The Buzzard feeds on field-mice, reptiles, frogs, grasshoppers, and occasionally earth-worms, varying this diet now and then with small birds.

As touching the true Eagles; the best known perhaps is the GOLDEN EAGLE (Plate VIII. fig. 3), a bird which now breeds in Britain only in the Highlands of Scotland. In England, Wales, and Ireland it occurs only as a rare straggler, and is everywhere shot down either by gamekeepers or collectors. It feeds upon hares and smaller mammals, grouse, and other birds, and when pressed by hunger will even eat carrion. The stories so often told of these birds carrying away children in their claws are silly stories, invented by the vulgar.

The eggs of the Golden Eagle, two or three in number, vary greatly in their coloration, and are much sought after by collectors, who thereby do their best to aid in the extermination of this fine bird, which measures about three feet in length.

The IMPERIAL EAGLE (Plate VIII. fig. 5) is a bird which can be easily recognised by the white patch on the shoulders. It is a southern form, occurring in South-east Europe, and ranging thence through Palestine to India and China. While some travellers describe it as displaying great beauty and majesty in its movements, and dauntless courage when foraging for food—which consists of Bustards, Hares, Lizards, and so on—others tell a very different story. Thus, another writer assures us that it is a dull and stupid bird. "I have driven," he says, "the female off hard-set eggs, and plundered the nest before the eyes of the pair without either flapping a pinion even to defend what even a little Shrike will stoop at once to save."

The WHITE-TAILED EAGLE (Plate VIII. fig. 4), which is known also as the Erne and Sea Eagle, is now much more rare in Great

Britain than formerly, when it bred in Wales, the Isle of Man, and the Lake District of England, and in many parts of Scotland. To-day, a few pairs still breed in the western and northern islands of Scotland, and occasionally on the west coast of Ireland.

Very old birds have the head and neck almost white, but the white tail is not acquired till the bird is several years old.

Most of the reports of Golden Eagles killed in England turn out, on examination, to be White-tailed Eagles. They may easily be distinguished, for while in the Golden Eagle the legs are feathered down to the toes, in the Sea-Eagle the part known as the "tarsus"—which is feathered in the Golden Eagle—is covered with small yellow scales.

There can be no justification for the insensate persecution which has been meted out to this bird in Great Britain, for it lives for the most part on fish and offal cast up by the sea, and occasionally on hares and rabbits; when pressed by hunger it has even been known to attack lambs.

In North America, and as far south as Mexico, the place of this bird is taken by the "Bald Eagle," which differs from the British bird just described in having a pure white head and neck.

We come now to the OSPREY (Plate VIII. fig. 1). This bird was at one time regarded as a connecting-link between the true Hawks and Eagles, and the Owls. And this because, as in the Owls, the hind-toe is reversible; that is to say, it can be turned either outwards or backwards. But this character is now known to be quite misleading; the Owls have no sort of relationship to the true Hawk tribe.

The Osprey lives entirely on fish, which it captures by a sudden dive from a height, sending up a shower of spray as it plunges into the water to seize its victim. Occasionally it will set its talons into a fish too large to be lifted out of the water, in which case death from drowning speedily follows. In order to hold such slippery prey the more easily, the soles of the feet are provided with numerous rough spines.

Though the Osprey once bred in different parts of England and in many places in Scotland, it does so now only in the Highlands, and even here it is rare. It seems never to have bred in Ireland. In the very near future this beautiful bird will probably be exterminated

as a breeding species in Great Britain, so ruthless is the persecution to which it is subjected.

The Osprey enjoys a world-wide distribution. And although the American Osprey is considered by some to be a distinct species, this is doubtful.

Time was when the Falcons were prized above all others for the sport of falconry, to-day they are shot as "vermin"!

The Falcons form a group by themselves, more or less distinct from the rest of the birds of prey, though the characters which give them this distinction are mainly anatomical. Of their external characters two stand out prominently—the long, pointed form of the extended wings, and the notch or tooth near the tip of the upper jaw.

Though in earlier times many different species of Falcons could be met with in Great Britain, to-day their ranks are sadly thinned; some have become extinct, in so far as Great Britain is concerned.

The KESTREL (Plate VII. fig. 2) is yet, happily, a fairly common bird with us, and can be seen almost daily, in the wilder part of the country, hovering in the air on quivering wings as it surveys the land in search of mice, which form the chief food of this bird. As with the Falcons generally, the Kestrel builds no nest, but uses the deserted nurseries of Crows, Magpies, and Wood-pigeons, or deposits its eggs on the ground in cavities of cliffs, chalk-pits, quarries, and hollow trees.

The male when fully adult is a very handsome bird; but the female is duller in hue, and has the back and tail closely barred. The young, as is so often the case when the sexes differ in the adult dress, resemble the female. The eggs, as with all the Falcons, are very richly coloured.

In America a Kestrel somewhat resembling the British species is found, and this is known, curiously enough, as the Sparrow-hawk, a name which is applied, in England, to a bird belonging to quite a different section of the Hawk tribe.

The HOBBY, the MERLIN, and the PEREGRINE are other Falcons still to be met with in Great Britain, though in steadily decreasing numbers, owing to the ceaseless persecution to which they are subjected.

The GREENLAND FALCON (Plate VIII. fig. 2) is one of the largest of the Falcons, and is taken occasionally in Great Britain. It is a

native, as its name implies, of Greenland. In olden days, when the sport of falconry was at its height, this bird was the most highly prized of all the Falcons. The general tone of the plumage is pure white, relieved by black markings. Nearly allied to this bird is the American Labrador Falcon, but this is at once distinguishable by its very dark colouring. The food of the Greenland Falcon consists chiefly of Ptarmigan and Willow-grouse, varied by Lemmings and other small mammals.

We bring this chapter to an end with a description of the Vultures, birds which present many very interesting points for consideration.

If the strict rules of classification had been adhered to, some of the birds now to be described would have had their turn quite early in the chapter. But for reasons which will presently appear, this order was not observed.

To be brief, the Vulture-like birds taken as a whole are by no means all closely related one to another. Divided into " Old "- and " New-world " Vultures, the former constitute a very ancient family, standing aloof, as it were, from the Hawks, Buzzards, Eagles, and Falcons. If we take these last as representing so many branches of a common stem, then the Vultures may be regarded as forming a similar independent stem, both arising, however, from a single trunk. The letter " Y " may well represent this. The different kinds of Old-world Vultures may be pictured as forming so many branches cut off from the left-hand, and the Hawks, Buzzards, Eagles, and Falcons as so many branches cut off from the right-hand branch of the " Y," the stem of which indicates that both main branches with their ramifications came from the same stock.

The "New-world" Vultures, however, form a group by themselves ; they are the terminal branches of a separate trunk, which we may suppose grew out from the very root of the " Y "-shaped tree just described. They may at once be distinguished from *all* other birds of prey by the fact that the nostrils are pierced quite through, whereas in the rest of the birds of prey they are divided by a partition ; further, the feet and claws of the New-world forms are less " Hawk-like."

Of the Old-world Vultures, three very interesting species are figured on Plate IX.

The smallest of these is the EGYPTIAN VULTURE (Plate IX. fig. 2),

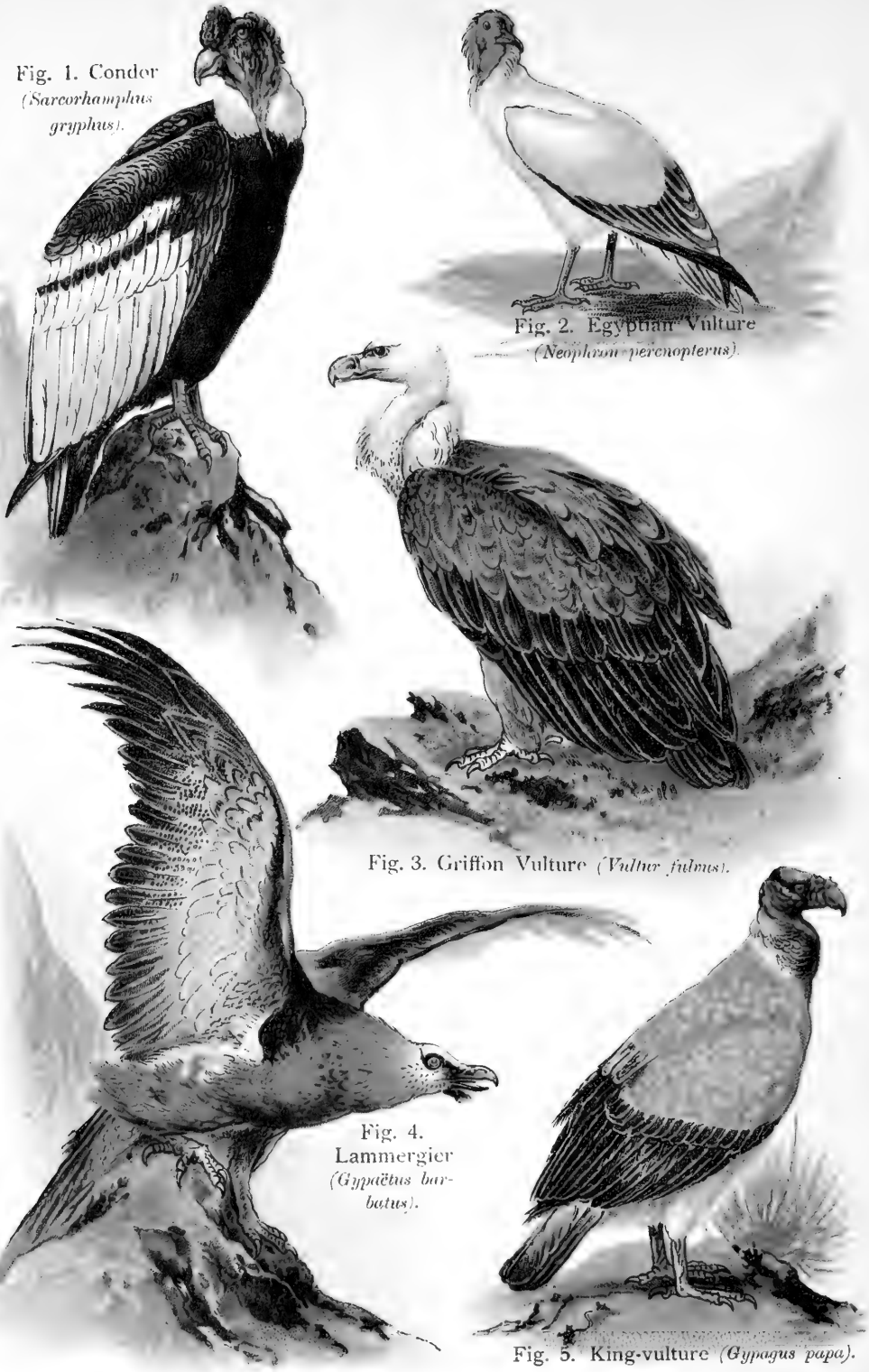

Fig. 1. Condor (*Sarcorhamphus gryphus*).

Fig. 2. Egyptian Vulture (*Neophron percnopterus*).

Fig. 3. Griffon Vulture (*Vultur fulvus*).

Fig. 4. Lammergier (*Gypaëtus barbatus*).

Fig. 5. King-vulture (*Gypagus papa*).

a bird which has twice been taken in Great Britain. It is one of the smallest Vultures, and is found in considerable abundance in the Mediterranean countries and Africa. Though it has the reputation of being an exceptionally foul feeder, devouring all kinds of offal and excrement, as well as Lizards and Snakes, it must be regarded as a most useful bird, removing offensive matter, which in such hot climates would soon breed pestilence.

The Griffon Vulture has occurred once in Great Britain, a specimen having been captured so far back as the spring of 1843 near Cork Harbour. Seeing that it is common in Southern Europe, it is strange that it has not been more often recorded from our islands. It is a large bird, having a length of about 3 feet 6 inches (Plate IX. fig. 3).

But the most interesting of all the Vultures is perhaps the GREAT LAMMERGEIER, or Bearded Vulture, the "Ossifrage" of Scripture (Plate IX. fig. 4). This bird extends from Southern Europe throughout Central Asia and the Himalayas. Though at one time frequently met with in Switzerland, it is now almost unknown in that country.

One of the most striking things about this bird is the brilliant vermilion-red colour of the outer coat of the eye—of the part answering to the "whites" of human eyes; the rest of the eye is golden yellow, with a black pupil.

It is a magnificent flier, and traverses great distances in search of food, which consists of small animals and carrion. Bones, however, appear to be considered a great delicacy, and to smash these the bird will often drop them from a great height on to the rocks below.

Of the "New-world" Vultures, to which we must now turn, the most striking species are the KING VULTURE (Plate IX. fig. 5) and the Condor. The first mentioned is met with from Brazil to Mexico, Texas, and Florida, in the mountain regions ranging as high as five thousand feet. It is a really wonderful bird, by no means common, and by no means well known. One of the most remarkable features of the male is the curious fleshy wattle which surmounts the beak, while the head, which is quite featherless, has the skin most brilliantly coloured with varying shades of orange, purple, and crimson. The female is more soberly coloured, having the upper parts dark instead of cream-coloured, and lacking the brilliant colours of the naked parts of the head.

The CONDOR (Plate IX. fig. 1) is a near relative of the King Vulture, but greatly superior in size. It enjoys the distinction, indeed, of being not only the largest of the birds of prey—being about five feet in length—but one of the largest flying birds.

The head of the male is adorned with a great fleshy wattle, which surmounts the base of the beak.

Though commonly described as living in the Andes, this bird is met with also from the mouth of the Rio Negro on the east coast of Patagonia, through the Straits of Magellan, and along the Cordilleras. It feeds upon carrion, but shows a marked liking for fresh meat when this can be procured, though it never apparently kills for itself. Like other Vultures, Condors, when they come upon a large carcase, gorge themselves, and this so completely that flight for some hours is impossible. Darwin has described how, at such times, the Gauchos ride them down on horse-back and take them with the lasso.

CHAPTER VIII

THE "GAME-BIRDS"

Order—GALLIFORMES

THE term "Game-birds" naturally suggests Pheasants and Partridges, and these may indeed be regarded as typical Game-birds. But for want of a better name we have also to include all the relatives of these birds near and remote, and this relationship is determined by anatomical characters. Of these, some are apparent externally, such as the form of the beak and of the legs, and the general shape of the wings and body. The beak has the upper portion arched, and completely overlapping the lower; while the legs have strong toes and short, blunt claws, thus forming admirable digging and scratching tools. As a rule these legs are covered with scales, and are commonly armed with one or more pairs of very powerful spurs. But some have very short legs, feather-clad, and without spurs.

The Game-birds are divided into two great groups—one in which the hind-toe is on the same level as the other toes, and the other in which the hind-toe is placed at a higher level than the rest. To the former belong the curious Mound-birds, or Megapodes, and the equally curious Guans and Curassows—birds which space forbids us to describe here. All the rest of the Game-birds belong to the section which have the hind-toe at a higher level than the rest.

In both sections the young birds are clad in down, and able to run about immediately they leave the egg.

Of this second group, or section, of the Game-birds, the most ancient types must be described first, and among these we may reckon

the Turkeys. The MEXICAN TURKEY (Plate X. fig. 3) is the ancestor of the Turkeys of our farmyards, the males of which strut so proudly with the feathers of the back on end, the wings dropped, and the tail spread like some great wheel. One of the most remarkable features of the Turkey is the curious tuft of hair-like feathers which hangs down from the breast, though the brilliantly coloured naked skin of the head and neck is more striking. The long, finger-like, fleshy wattle, which hangs down over the beak, can be greatly increased in length at the will of the bird.

Turkeys in a wild state occur only in the southern United States, and they are becoming more and more rare.

The GUINEA-FOWL (Plate X. fig. 2) is a native of Africa. This bird is easily domesticated, and is a common occupant of our farmyards, enlivening the scene by their strange shape and curious cry, "Come-back, come-back, come-back." But besides this species, there are numerous others known to science, of which the most beautiful is the Vulturine Guinea-fowl.

The Pheasant tribe includes some very unpheasant-like birds, at least to those who are not well versed in the study of Ornithology.

Our domesticated fowls, for example, are really near relations of the Pheasants. All the different kinds of Fowls which are now known have descended from the Jungle-fowl—the "Bhund Moorg"—of India. By careful breeding man has produced from this bird such remarkable varieties as the Cochin-china, the Polish-fowl, the Black Spanish, Hamburg, and a host of others. But of these domesticated races which man has created, some bear a rather close likeness to the Red Jungle-fowl—such, for example, as the fowls known as the "Game-fowl," from which "fighting-cocks" were bred in days when "cock-fighting" was a common sport in England. And after these perhaps the next nearest is the BROWN LEGHORN fowl (Plate X. fig. 4a), though in this breed the comb is much larger than in the wild Jungle-fowl.

Of the true Pheasants, the familiar "COMMON PHEASANT" (Plate XI. fig. 3) is the best known. This is a native of Asia Minor. Once upon a time, however, Pheasants lived wild in Europe, as is shown by fossil remains. Thus, the Pheasants of our coverts may have originally descended from these European birds, though it is generally

Fig. 1 B.
Argus-pheasant.
Female.

Fig. 1 A.
Argus-pheasant
(*Argusianus argus*).
Male.

Fig. 2. Guinea-fowl
(*Numida meleagris*).

Fig. 3.
Mexican Turkey
(*Meleagris gallopavo*).

Fig. 4 A.
Brown Leghorn Fowl
(*Gallus domesticus*).
Male.

Fig. 4 B.
Brown Leghorn Fowl.
Female.

supposed that they were introduced from Asia Minor by the Romans. The "Common Pheasant" is to-day a very rare bird in Great Britain, and this because it has inter-bred with other species which have been introduced and allowed to run wild. Of these the commonest is a species which is distinguished by a white ring round the neck, as well as by other differences in coloration, with which we cannot deal here.

The GOLDEN PHEASANT (Plate XI. fig. 1, a, b) is a native of Southern and Western China. From its resplendent plumage it is commonly kept in aviaries. The golden neck-feathers, barred with black, are of great length, and can be spread out, at the will of the bird, to form a wide, circular cape. Only the males wear this cape and gaudy plumage, the female being quite soberly coloured.

The SILVER PHEASANT (Plate XI. fig. 4) is another bird commonly seen in aviaries. It is a native of South China, but is now rare in a wild state, and little is known of its habits, save in confinement. This is the bird which is embroidered as a badge on the dresses of mandarins.

Perhaps the most remarkable of all the Pheasant tribe are the ARGUS PHEASANT (Plate X. fig. 1, a, b) and the PEACOCK (Plate XI. fig. 2, a, b).

The Argus Pheasant, a native of the Indo-Malay peninsula and Sumatra, differs from all other birds in the enormous length of the inner quill- or flight-feathers of the wings, while the tail-feathers are also extremely long. But it is not so much the great length as the marvellous beauty of these quill-feathers which makes them noticeable. Each is marked by a most wonderful and complicated pattern, the most conspicuous feature of which is the row of eye-like blotches, each of which is so delicately tinted as to give the appearance of a ball lying within a dark cup. When the bird wishes to charm his mate—who is quite soberly coloured—he spreads these wings so that they form a great circle, displaying to the very best advantage these extraordinary ornaments.

More familiar is the Peacock of India and Ceylon—a bird so well known in confinement as to need no description here. It may be well to point out, however, that the gorgeous "train" of this bird is not, as is so commonly supposed, a tail, but is composed of the feathers

of the back- and tail-coverts. The true tail is not larger than that of the hen, and is similarly coloured. And thus it is that, when the train is erected and spread, only the head and neck are apparent when the bird is facing the spectator. This fact is invariably lost sight of by artists, who always draw the train as though it were a tail.

The nearly related Javan Peacock differs from the Common Peacock chiefly in having the neck-feathers of enormous size, so that the neck has almost the appearance of being clothed in large, overlapping scales, thereby contrasting with the softer feathers of the more familiar bird.

The Partridges and Quails, between which and the Pheasant tribe there is no very sharp limit, must now be described.

The best known of the Partridge tribe is the COMMON PARTRIDGE (Plate XII. fig. 5). This bird is also sometimes called the "Horse-shoe" Partridge, from the presence of a horse-shoe-like band of feathers on the breast, supposed by many to be the distinctive mark of the male; but this is not so, since this mark appears in both sexes. The female can always be distinguished by the buff cross-bars on the smaller wing-coverts. The Common Partridge occurs also in Europe. In Eastern Siberia it is replaced by the "Bearded Partridge," which differs from the kind met with in Great Britain chiefly in the long, beard-like feathers of the throat.

The "Red-legged" Partridges belong to a different group of the Partridge tribe, and are remarkable not only for the red colour of the legs, from which they take their name, but also for the beautiful barring of red, black, and lilac-grey of the feathers of the flanks.

In Great Britain but one species occurs—the Common Red-legged Partridge—which ranges over South-western and Western Europe.

The ROCK RED-LEGGED PARTRIDGE (Plate XII. fig. 7) is a native of the mountains of Southern Europe, from the Pyrenees to the Balkans, and differs from our British bird chiefly in the absence of white in the barring of the flanks and of black spots on the chest.

The Quails may very well be described as miniature Partridges. The best-known species is the COMMON QUAIL (Plate XII. fig. 4)—a bird which occurs occasionally in Great Britain. It is found also

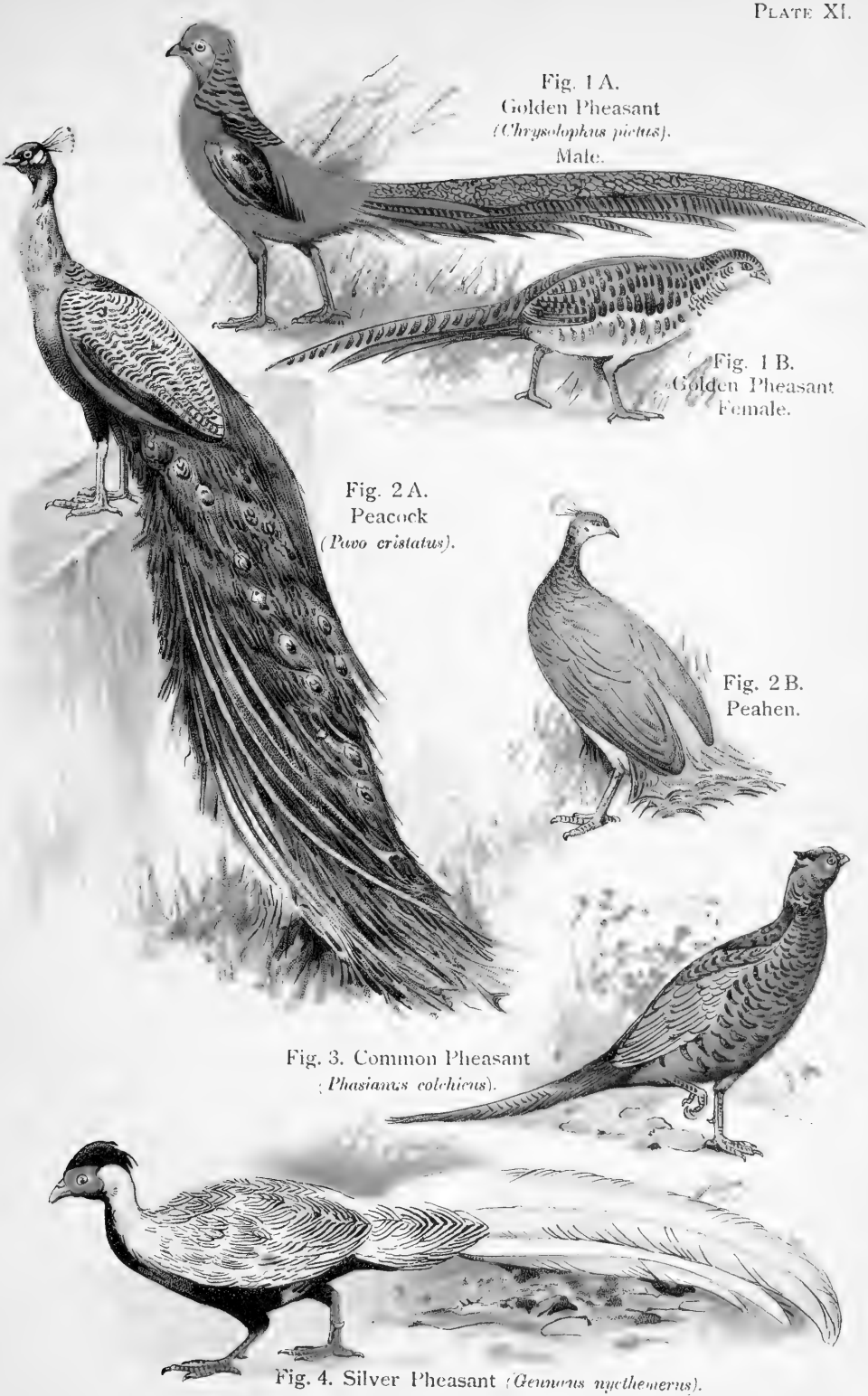

Fig. 1 A.
Golden Pheasant
(Chrysolophus pictus).
Male.

Fig. 1 B.
Golden Pheasant
Female.

Fig. 2 A.
Peacock
(Pavo cristatus).

Fig. 2 B.
Peahen.

Fig. 3. Common Pheasant
(Phasianus colchicus).

Fig. 4. Silver Pheasant *(Gennæus nycthemerus).*

in Europe and Northern Asia, migrating in vast hosts, upon which enormous raids are made to supply our tables in the spring months of the year. "The numbers," says Dr. Sharpe, "which appear in the winter quarters of the species, in Northern Africa, in Egypt, and above all in North-western India, are sometimes incredible."

Quails and Partridges are met with only in the Old World.

With the Grouse tribe our account of the Game-birds comes to an end.

Of the many species which are known, the CAPERCAILZIE, or Cock of the Woods (Plate XII. fig. 1, a, b), is the largest; it is, indeed, one of the largest of the Game-birds. In Great Britain it is confined to Scotland, where it has been re-introduced. At one time it occurred in suitable localities, throughout the British Islands. Like the Black-cock, to be described presently, the Capercailzie has several wives, and the most desperate fights take place in the spring, among the males, for the possession of the coveted females. The male Capercailzie has a strange habit of resorting to some particular spot in the forest to sing his love-song, and during this time he becomes so absorbed as to be unconscious of the approach of enemies. At such times unscrupulous "sportsmen," in some countries, contrive to get near enough to shoot him. The female is smaller than her mate, and quite dull-coloured.

The BLACK GROUSE (Plate XII. fig. 3) is a particularly handsome bird, remarkable for the curious shape of the tail. Though found in small numbers in various parts of England, the real home of this bird, in Great Britain, is in Scotland. During the spring these birds go through very extraordinary performances—the males alone. And these are enacted, apparently, for the delight of the females, which assemble in the neighbourhood to witness the display. As with the Capercailzie, the females are of a rich brown colour, barred with black.

The PTARMIGAN (Plate XII. fig. 6) is a very near relative of the Red Grouse, and is now confined, so far as Great Britain is concerned, to the Highlands of Scotland, though time was when it was also to be met with in England—at least, tradition says so. This bird is peculiar in that in winter the richly coloured plumage worn during the summer and autumn is exchanged for a dress of pure white,

whereby the birds are enabled to conceal themselves in the snow from their enemies. The Red Grouse, or "Ryper," of the Continent of Europe—known as the Willow Grouse—adopts a similar change; but this is not the case with our Red Grouse. And this because the snow does not lie long enough, in the lowlands where they dwell, to need a specially protective dress. The Willow Grouse, or Ryper, we should remark, occurs also in the northern parts of the American Continent.

The HAZEL-HEN, or Gelinotte (Plate XII. fig. 2), is a native of Europe and Northern and Central Asia, and is greatly esteemed as an article of food, large numbers being imported into the London market from Scandinavia and Russia.

Fig. 1 A.
Capercailzie
(Tetrao urogallus).
Male.

Fig. 2. Hazelhen *(Tetrastes bonasia)*.

Fig 1 B. Capercailzie.
Female.

Fig. 4. Quail
(Coturnix communis).

Fig. 3. Black Grouse
(Tetrao tetrix).

Fig. 5.
Common
Partridge
(Perdix cinerea).

Fig. 6. Ptarmigan *(Lagopus mutus)*.

Fig. 7. Rock, Red-legged Patridge
(Caccabis saxatilis).

CHAPTER IX

CRANES, RAILS, AND BUSTARDS

Order—GRUIFORMES

THE Cranes, Rails, and Bustards, though externally very different in appearance, are yet really closely related. The Cranes and Rails are fen-birds, the Bustards, on the other hand, are birds which frequent sandy wastes. While the Cranes, at most, wade but "knee-deep," the Rails swim and dive with ease. Both are vegetable feeders, though this diet is varied by insects, and molluscs such as snails and slugs, and worms. The Bustards, too, live largely on vegetable matter, but they also eat small mammals such as mice, and reptiles.

The Crane (Plate XIII. fig. 1) was once common in Britain, but, alas! it is now only met with in these islands on very rare occasions. It used to breed in the fens and swamps of East Anglia, but that was three hundred years ago. Not only is it a large and very beautiful bird—measuring over 4 feet in length—but it is remarkable, furthermore, for the curious way in which the windpipe is disposed of. Instead of running straight down the neck to the lungs, it passes first into a large chamber formed by inflating and hollowing out the keel of the breast-bone. After forming a coil, or loop, within this strange chamber, it emerges therefrom and passes backwards to the lungs. By the increase in length which the windpipe thus gains, an extremely loud and resonant voice is produced. The Crowned Crane (Plate IV. fig.9) is an African bird remarkable for the curious tuft of bristle-like feathers which surmounts the head.

The Rail tribe are all small birds, of shy, rather skulking habits and feeble flight. One of the smallest is the LITTLE CRAKE (Plate XIII.

fig. 5). This bird occurs but rarely in Great Britain, and is a native of Africa. The SPOTTED CRAKE (Plate XIII. fig. 6), on the other hand, was a common breeding bird in Great Britain years ago. Since the fen- and marsh-lands, however, have become so largely reclaimed, it has sadly decreased in numbers. It is common all over Europe during the summer, but it returns to Africa to winter.

The CORNCRAKE, or Landrail as it is often called (Plate XIII. fig. 9), unlike the Little Crake and Spotted Crake, which love the marshes, is a bird which frequents dry meadows, clover-fields, and fields of standing corn. Though but of feeble flight, it yet leaves this country every autumn to pass the winter in Africa, returning again in the spring. This bird makes a very remarkable " creaking " note during the summer months, especially at evening time, a note which can easily be imitated by passing the thumb-nail rapidly over the teeth of a comb. By this means the bird may be lured to within a short distance of the operator. It does not take wing readily, and flies slowly, with its legs hanging down. When hard pressed, and especially if wounded, it will elude even a dog, by climbing among tangled bushes ; and when captured, will frequently contrive to make a speedy escape by feigning death, a device followed by other members of this family.

The WATER-RAIL (Plate XIII. fig. 3) may be considered a resident of most of the marshy land in England, and especially, perhaps, in Norfolk. It also occurs, though less plentifully, in Scotland and Ireland. It is never found far from water, and swims and dives with remarkable ease. And this, too, it is to be noted, in spite of the fact that the feet are not webbed ; the toes being, on the contrary, of great length and slenderness. On account of its shy and retiring habits it is a bird but rarely seen, even where it may be described as common.

The Coot and the Water-hen are to be reckoned among the commonest of the inland water-birds of Great Britain. Both are admirable divers, and, like the Water-rail, do not have webbed feet, though the toes of the Coot are provided with broad lobes of skin along their sides.

The WATER-HEN (Plate XIII. fig. 4) may be distinguished from the Coot not only by its smaller size, but also by the bright vermilion-

Fig. 1. Crane (*Grus communis*).

Fig. 2. Little Bustard (*Otis tetrax*).

Fig. 3. Water-rail (*Rallus aquaticus*).

Fig. 4. Water-hen (*Gallinula chloropus*).

Fig. 5. Little Crake (*Porzana parva*).

Fig. 6. Spotted Crake (*Porzana maruetta*).

Fig. 7. Coot (*Fulica atra*).

Fig. 9. Corn-Crake (*Crex pratensis*).

Fig. 8. Great Bustard (*Otis tarda*).

red shield on the forehead and the white patches beneath the tail. Though an extremely timid bird in a wild state, it yet thrives well in the ornamental waters of public parks; such as those of London, for example, where it speedily becomes tame.

The COOT (Plate XIII. fig. 7) is a larger bird than the Water-hen, and easily distinguished by the broad white shield on the forehead and the absence of white below the tail. It is a particularly common bird on some of the Norfolk broads.

Young Coots—while still in the nestling-down plumage—have the head ornamented by numerous little fleshy warts of a vermilion-red colour, while the rest of the down plumage is, as in the case of the Rail tribe generally, jet black in colour.

The BUSTARDS were at one time believed to be closely related to the Plover tribe, but it is now known that they are more nearly related to the Cranes. They are birds which love dry, sandy wastes, and as a rule fly but little.

The LITTLE BUSTARD (Plate XIII. fig. 2) is a bird which occasionally visits Great Britain, favouring the eastern countries mostly. It is common in certain parts of Europe, especially the Spanish Peninsula; in Africa, north of the Sahara, it is abundant, while the same may be said of it during the winter months in North-western India.

Quite a different story is to be told of the GREAT BUSTARD (Plate XIII. fig. 8), since this bird was at one time commonly to be met with in certain parts of Great Britain, especially the heaths of Norfolk, Suffolk, and Cambridgeshire, the wolds of Lincolnshire, the downs of Sussex, and Salisbury Plain. In Scotland it was to be met with, though sparingly, in parts of Berwickshire and East Lothian. The enclosures of waste land, the planting of trees, and the increase of population have now, however, driven this, the largest of our British birds, from all its strongholds, so that to-day, so far as Great Britain is concerned, the Great Bustard is extinct. This is greatly to be regretted, for, without question, it was one of the most interesting of our native birds. And at no time was this so evident as during the period when the males were courting. Then, indeed, they performed the strangest antics, throwing up the tail over the back, drooping the wings, and inflating the neck till it assumed

huge proportions. This was done by means of a curious bag which ran down the front of the neck, just beneath the skin, and which was filled through an opening at the base of the tongue. During the time that this bag was in use the neck was drawn downwards over the back, while the head was so bent that the beak rested upon the wind-bag. This strange performance was apparently enacted for the delight of the female.

The Bustards, we may remark, are birds peculiar to the Old World.

CHAPTER X

PLOVERS, GULLS, AND AUKS

Order—CHARADRIIFORMES

THE birds which form the subject of the present chapter represent a very varied assemblage, yet all are closely related. They include, besides the typical Plovers, the Pratincoles, Stilts, Curlews, Snipes, Phalaropes, Gulls, and Terns. All are Plovers, in a wide sense.

While some frequent inland waters and marshy places, others keep more or less entirely to the sea coast. Though the majority are never found far from water, some have contrived to find a living on dry, sandy wastes. All are remarkable for their great powers of flight, some, indeed, performing prodigious journeys during migration.

The young of the more typical of the Plover tribe are all quite active from the moment they leave the shell, and are covered in short down more or less mottled with black ; but the coloration of the down varies greatly in different species, being very pale in such as breed in sandy wastes, dark when the nesting-ground is in marshy areas.

One of the most aberrant of the Plover tribe is the beautiful PRATINCOLE (Plate XIV. fig. 6), a bird which in many ways recalls the Swallow. Since it has occurred several times in Great Britain, it is therefore to be reckoned a British bird ; but these visits are very rare. It breeds, however, in many parts of Europe. Like the Swallow, this bird takes much of its food on the wing—beetles, grasshoppers, and locusts forming the principal prey. On the ground it runs nimbly.

This bird is described as an " aberrant " Plover, because it is in

so many ways unlike the true or typical Plovers; it is to be regarded, indeed, as the descendant of a more ancient stock, as a side-branch of the tree which gave rise to the typical Plovers.

Of these last we may regard the GOLDEN PLOVER (Plate XIV. fig. 1) as a very good example. This is a fairly common British bird, breeding in Devon and Somersetshire, parts of Wales, Scotland, and Ireland, while their numbers are largely increased by migrants from abroad during the winter months.

In the spring of the year this bird dons a gorgeous livery of black and gold above, set off by a jet-black breast. In the autumn the feathers of the under parts become replaced by white, while the upper by the reduction of the black markings become more golden.

In America this bird is represented by a smaller race.

The RINGED PLOVER (Plate XIV. fig. 4) is to be reckoned among our commonest British shore-birds, breeding among the shingle of the beaches. No nest is built, the eggs being deposited in a slight hollow in the sand, and from their close resemblance to the surrounding stones are exceedingly hard to find; and the same is true of the downy nestlings.

The little KENTISH PLOVER (Plate XIV. fig. 5) is a much smaller bird, easily recognisable by the fact that the dark chest-band is incomplete. It arrives on the shores of England about April, and leaves again in September. It is by no means a common bird, and is met with most frequently in Norfolk and Suffolk, and on the shingle beaches of Kent and Sussex.

This bird is represented in America by a species distinguished by having a patch of white, in place of black, between the beak and the eye.

The LAPWING (Plate XIV. fig. 2), or "Peewit," is the commonest of the Plover tribe in Great Britain, though the lamentable practice of eating its eggs is speedily reducing its numbers. This is greatly to be deplored, as it is one of the most valuable of the farmers' allies.

The eggs, four in number, vary greatly in colour, and are laid in a slight depression in the ground, little or no preparation in the way of a nest being made for their reception.

On the approach of winter these birds collect in large flocks, to

Fig. 1. Golden-plover
(Charadrius pluvialis).

Fig. 2. Lapwing
(Vanellus vulgaris).

Fig. 3.
Black-winged Stilt
(Himantopus candidus).

Fig 4. Ringed-Plover
(Ægialitis hiaticula).

Fig. 5. Kentish Plover
(Ægialitis alexandrina).

Fig. 6. Pratincole *(Glareola pratincola).*

Fig. 7. Curlew *(Numenius arquatus).*

Fig. 8. Woodcock *(Scolopax rusticola).*

Fig. 9. Jack-snipe *(Gallinago gallinula)*

Fig. 10. Solitary Snipe *(Gallinago major).*

disperse again in the spring. Worms, slugs, and insects form their principal food.

Of all the Plover tribe the BLACK-WINGED STILT (Plate XIV. fig. 3) is certainly one of the most remarkable. And this because of the enormous length of the legs. Though reckoned among our British birds, it is but a rare visitor to these islands; but it is met with in abundance in the marismas of Spain, the marshes of Sicily, and of the Black, Caspian, and Oral Seas. It also nests freely around the lakes of North Africa and parts of North India. When the ground is tolerably dry, but little nest is made for the reception of the eggs; when, however, the ground is wetter, a more solid structure is made. The great length of the legs is to be explained by the fact that this bird obtains most of its food—which consists of small snails, gnats, and other flies and beetles—by wading out into shallow water.

Another very remarkable member of the Plover tribe is the Avocet (Plate XV. fig. 4). In this bird the beak, which is long and slender, is produced into a very delicate point, and curved upwards.

At one time the Avocet bred in considerable numbers in Great Britain, but drainage and the collector have combined to bring about its extinction as a breeding species. It occurs, indeed, to-day only fitfully. Could it, however, be efficiently protected by legislation, a few pairs might still be induced to breed. Quite a large colony was wiped out at Salthouse to supply the demand made for the feathers of this bird by the "fly-fishermen."

Closely allied species occur in North and South America and in the Australian region.

We must turn now to the Snipes and Woodcocks—birds with which most people are more or less familiar. The long, slender bills and long legs which distinguish these birds show at once that they cannot live long far away from water. They are indeed marsh- and swamp-dwellers, living on worms and aquatic insects and small water-snails. The worms are obtained by probing in the soft soil, and are apparently detected by the tip of the beak, which is soft and very sensitive, being supplied by a pair of large nerves.

The Common Snipe is too well known to need description, but we might draw attention to the fact that the long, buff-coloured stripes which run along the back of the bird play a very important part,

since they serve to blend the body with the surrounding grasses when the bird is crouching to avoid its enemies, which it always does in preference to seeking safety by flight.

In the spring-time both the males and females spend much of their time in making the very extraordinary sounds known as "bleating." This curious humming noise they produce by mounting high into the air and then descending with tremendous rapidity, meanwhile spreading the tail so that the two outer feathers stand apart from the rest. The rush of the air against these outspread feathers causes the bleating sounds which have puzzled and fascinated so many observers for the last hundred years or so.

Though this bird breeds in Great Britain, large numbers come over from the Continent every autumn, leaving again in the spring.

The Common Snipe has only fourteen tail-feathers, but a near relative of this species, which is found in North America, is distinguished, among other things, by having sixteen tail-feathers.

The JACK SNIPE (Plate XIV. fig. 9) is also a common British bird, a winter visitor, leaving us in the spring to breed in Northern Europe. Smaller than the Common Snipe, it is further distinguished therefrom by having but twelve tail-feathers and two notches in the hinder margin of its breast-bone.

Like the Common Snipe, it makes curious noises during the breeding-season ; but these are apparently vocal, and not made by the tail—they are described as resembling the noise made by a horse when galloping on a hard road.

Yet a third species of Snipe is met with in Great Britain. This is the GREAT, or SOLITARY, SNIPE (Plate XIV. fig. 10). An annual visitor to the eastern and southern portions of England, it only very rarely occurs in Ireland. The real home of this bird is found in the marshy districts of Poland and in parts of Russia ; but it is to be met with also in Africa and in Asia. It is a larger bird than the Common Snipe, and has relatively shorter beak and legs, and more closely barred under parts.

Finally we come to the WOODCOCK (Plate XIV. fig. 8). Larger than any of the Snipes, this bird is further distinguished by its beautifully barred, russet-brown plumage, and the transverse black bar across the top of the head. The Woodcock is increasing in

Fig. 1. Greenshank
(Totanus canescens).

Fig. 2. Ruff *(Machetes pugnax).*

Fig. 4. Avocet
(Recurvirostra avocetta).

Fig. 3. Little Stint
(Tringa minuta).

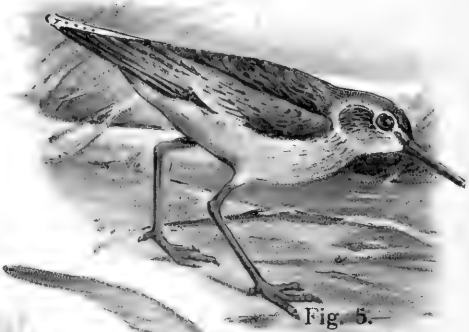

Fig. 5.
Redshank
(Totanus calidris).

Fig. 7. Dunlin *(Pelidna alpina).*

Fig. 6. Curlew Sandpiper
(Tringa subarquata).

Fig. 8. Knot *(Tringa canutus).*

Fig. 9. Sanderling *(Calidris arenaria).*
Winter plumage.

numbers as a breeding species in Great Britain, largely owing to the increase of plantations; but besides these home-bred birds, large numbers arrive in this country from abroad in the month of October.

Few birds are so highly esteemed by gourmets, as is shown by the old couplet:

> If the Partridge had but the Woodcock's thigh,
> 'Twould be the best bird that ever did fly.

By some strange notion these birds are supposed to live on "suction," whatever that may mean. And, accordingly, they are cooked with the entrails in the body, and served up on toast. If it were more generally known that worms form a very large part of the diet of this bird, this fashion of cooking would probably soon become obsolete.

But the Woodcock has yet another claim to our interest, and this rests upon a curious anatomical character—to wit, in the position of the ear-opening. This, as was first pointed out to me by my friend Mr. C. F. Whymper, is situated in *front* of and beneath the level of the eye. In the Snipes it lies *underneath* the eye, while in all other birds it is found *behind* the eye.

A number of species must now be described which differ conspicuously from the Snipes and Woodcocks in that they display two very distinct plumages during the year—a sober-coloured dress worn during the autumn and winter months, and a more richly coloured worn during the spring and summer, the latter being assumed just before the nesting-season, and hence is known as the breeding-dress.

The difference between the spring and winter plumages is, however, not very strikingly marked in the GREENSHANK (Plate XV. fig. 1). This bird is to be met with annually, though never in very large numbers, throughout Great Britain, on the seashore, as well as on inland waters. It is a rather large bird, measuring about 14 inches in length, and readily distinguishable by having a distinctly upturned beak. In summer the upper parts of the neck and wings are nearly black, relieved by pale grey edgings to the feathers; but in winter the upper parts are greyer, and the under parts white, while in summer the throat, breast, and flanks are flecked with ash-brown. Met with chiefly during the spring and autumn migrations, this bird breeds in

the northern parts of the mainland and the outlying islands of the north-west of Scotland, laying four eggs of a warm stone-colour blotched with purplish grey and spots of rich brown. The nest, such as it is, is often placed at a distance from water, and even on dry ground amid scattered pine-trees. On extremely rare occasions it has been met with in North America.

In the DUNLIN (Plate XV. fig. 7) the contrast between the summer and winter plumages is very striking. In the winter dress the upper parts are ash-coloured, the under parts white. But towards the end of March and the early days of April the new livery begins to make its appearance. When complete, the upper parts are of a rich golden brown, streaked, and blotched with black, except the wings, which remain grey, while the breast becomes jet-black. The females are somewhat larger, and have longer beaks than the males; but in the length of the beak there is great variation in both sexes. The average length of the female is about $7\frac{1}{2}$ inches.

The Dunlin, like the Snipe and Woodcock, and many other long and slender-beaked waders, has the power of curving the tip of the upper jaw upwards for a considerable distance, whereby worms may be seized when the beak is thrust down, probe-fashion, into the mud, which forms the feeding-ground of this species.

The Dunlin is a very common British bird, nesting in the wild moorlands, chiefly of the north. It is also met with as a breeding species in North America, extending as far south as California on the Pacific, and the West Indies on the Atlantic coasts.

The LITTLE STINT (Plate XV. fig. 3) in its winter dress looks like a miniature Dunlin; but in summer it assumes the coloration of its larger relative only in so far as the upper parts are concerned, the under parts remaining white. This bird does not breed either in Great Britain or in Ireland, and is met with in these islands only during the early spring and autumn. It appears to select the north of the European Continent for its breeding-ground. In America its place is taken by the American Stint, or "Least Sandpiper," which is distinguished from the Little Stint chiefly in that it is smaller and darker in colour at all seasons. On two or three occasions this tiny wanderer has been met with in Great Britain.

Much more striking in this matter of plumage is the CURLEW

SANDPIPER (Plate XV. fig. 6). In winter ash-grey above and white below, this bird, in the early spring, assumes a very richly coloured livery, the upper parts being beautifully barred and streaked with black and grey, on a ground-work of rich chestnut, while the under parts are of a chestnut-red, slightly barred in the flanks with dark brown and grey. The females, as in the Plovers generally, resemble the males, and are slightly larger.

The Curlew Sandpiper (or Pigmy Curlew as it is often called, because of the likeness of its beak to that of a Curlew) is an annual visitant to Great Britain, arriving chiefly in the autumn, and for the most part favouring our eastern shores. This autumn immigration consists chiefly of young birds; but small numbers of adults arrive each spring in their full breeding-colours, and these birds, which arrive in March, continue to pass northwards, along the east coast of England, until June. They are then making their way to their breeding-grounds within the Arctic Circle. Only on very rare occasions does the Curlew Sandpiper visit the United States.

Like the Curlew Sandpiper, the Knot and the Sanderling have a red breeding-plumage.

The KNOT (Plate XV. fig. 8) is the largest of these three species, measuring 10 inches in length. In winter grey above and white below, it assumes in the spring a very handsome dress. The head and neck are reddish brown, with dark streaks, the back-feathers are blackish, spotted with chestnut and margined with white, while the throat and breast are of a rich, dark chestnut.

Until a few years ago the breeding-place of the Knot was unknown. It was, however, discovered breeding in the snow by Colonel Fielden when on the "Alert" Arctic Expedition in 1876. But on this occasion nestlings only were found. The eggs were unknown until the year 1901, when specimens were found in the Taimyr Peninsula, Siberia.

In America this bird is well known along the Atlantic sea-board, as well as on the great lakes and the Mississippi valley.

The SANDERLING (Plate XV. fig. 9) is peculiar in that, like some others of the Plover tribe, it has lost the hind-toe. In its autumn and winter dress this bird is grey above and white below; but during the summer months the feathers of the upper parts have dark brown

or black centres, edged or spotted with rufous, while the face, neck, and upper part of the breast are of a pale chestnut, spotted with dark brown. The young birds—that is, birds in their first plumage—have a livery which is more or less intermediate between the summer and winter dress of the adults, in that the feathers of the upper parts are black, spotted with white, and variegated with pale buff, traces of which colour appear also on the sides of the neck and breast.

In many ways, without doubt, the most remarkable of the Plover tribe is the RUFF (Plate XV. fig. 2). And this because of the wonderful frill of feathers which is displayed by the males during the courting-season, a frill which bears a fanciful resemblance to the old Elizabethan " ruff," from which the bird takes its name.

But it is not so much the existence of the " ruff " which has gained such notoriety for this bird as the coloration thereof, since in no two individuals is this ever coloured alike. As if to still further heighten the effect of the ornament, the head is adorned with broad " ear-like " tufts, while around the beak the feathers are shed, and replaced by brightly coloured fleshy papillæ. In our figure (Plate XV.) the ruff is black, and the ear-tufts dark brown ; but ruffs of white, buff, and chestnut also occur, and these may either be plain, or banded, or spotted, or streaked with darker colours. The plumage of the body at this season is no less variable ; but when autumn comes, these ornaments are discarded, and the males are distinguishable from the females—which are known as Reeves—only by their larger size.

These ruffs are made to play an important part during the courting-season, for at this time their wearers have a practice of meeting together daily for the purpose of " sparring " one with another, and fighting mimic battles. When a Ruff is in the presence of the " Reeve " he behaves very strangely, thrusting his beak down to the ground, and spreading out the ruff and ear-tufts to the fullest extent. In this position he will stand, without moving, for a minute or more, as if to give time to the female to study and admire him ; though, as often as not, she quietly walks off, so soon as she notices that he is too intent on his ceremonial bowing to notice whether she is looking on or not !

At one time the Ruff was quite a common bird in the fenlands

of Great Britain. Now, alas! it is extinct, as a breeding species. And this is due, partly to the extensive drainage and reclamation of land, and partly to the greed of egg collectors.

Occasionally, as a rare straggler, this bird wanders to the American Continent, and has been obtained in the Eastern United States.

The REDSHANK (Plate XV. fig. 5) brings us back, as it were, once again to more normal birds. Still fairly common in the fenlands and marshes of Great Britain and Ireland, this bird derives its name from the orange colour of the legs. Although it has distinct summer and winter plumages, these do not differ very conspicuously one from another. Thus, in the summer dress, the upper parts are of a buffish brown, streaked and barred with umber; while the under parts are white streaked on the neck, breast, and belly, and barred on the flanks with ash-brown. In winter the upper parts are ash-coloured, the under parts white, faintly streaked on the neck and breast with ash colour. The lower part of the back is always white.

In the CURLEW (Plate XIV. fig. 7) we bring this description of the Plovers to a close. With a beak like an Ibis, it may always be distinguished therefrom by its sober coloration of pale brown, relieved by darker streaks and spots—a livery which is worn the year round (there is no "summer" plumage). And in this uniformity of plumage it agrees, it will be remembered, with the Snipe and Woodcock.

Known as the Curlew on account of its cry, this bird is to be reckoned among the commonest of the wading-birds of Great Britain, breeding in the moorlands wherever sufficiently secluded—a love of solitude immortalised by Kingsley in the lines:

> On the lonely moorlands,
> Where the Curlew pipe.

It is also common in Ireland. The American representative of this bird is larger, and has the feathers known as the "axillary" feathers—from their relation to the arm-pit—of a rufous colour.

The Whimbrel is a bird very closely resembling the Curlew, but smaller. A few pairs breed annually in Scotland.

THE GULLS

At one time regarded as very near relatives of the Petrels, it is now known that, as a matter of fact, these birds are in reality very closely related to the Plovers ; and this is shown, curiously enough, most strikingly in the coloration of the eggs on the one hand and the skeleton on the other, though many other anatomical characters afford equally positive evidence of this fact.

Like the Petrels, and unlike the Plovers, they are web-footed. But they differ from the Petrels and resemble the Plovers in having slit-like instead of tubular nostrils.

Such species as display a distinct summer dress have this change confined to the coloration of the head, while many species take several years to acquire their fully adult dress.

The HERRING-GULL (Plate XVI. fig. 1) affords a good instance of those Gulls which take several years, three or more, to attain the characteristic adult livery. The back of the adult in the present species is of a delicate French-grey, the rest of the plumage being pure white, set off by the yellow colour of the feet and beak, which last is further decorated by a touch of bright red. The eye, too, is of a beautiful straw-yellow colour, set in a frame of vermilion formed by the rim of the eyelid. The sexes cannot be distinguished externally, and there is no "summer" and "winter" dress. The young birds are mottled with brown, and do not acquire their full plumage until the fifth year.

The Herring-gull is a common British bird, breeding on the precipitous ledges of cliffs or on the ground. In North America it has taken to breeding in trees to escape the raids of fishermen.

Nearly allied to the Herring-gull is the Great Black-backed Gull, a rather larger bird than the Herring-gull, and distinguished therefrom by having a dark, slaty-black, instead of a pale French-grey back.

The COMMON GULL and the KITTIWAKE (Plate XVI. figs. 2, 3) are to be met with in plenty around the shores of Great Britain. They have no decisive difference of plumage, nor any seasonal changes, except that, in the winter, like the Herring-gull, the head and upper

Fig. 1.
Herring Gull
(Larus argentatus).

Fig. 2. Common Gull *(Larus canus).*

Fig. 3. Kittiwake *(Rissa tridactyla).*

Fig. 5. Buffon's Skua
(Stercorarius parasiticus).

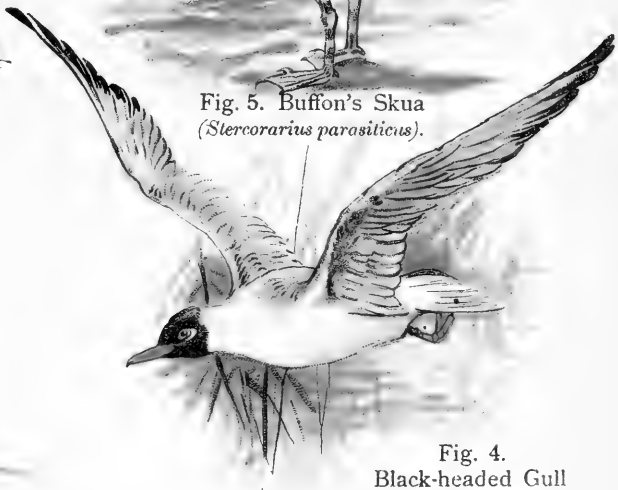

Fig. 4.
Black-headed Gull
(Larus ridibundus).

Fig. 6. Little Tern *(Sterna minuta).*

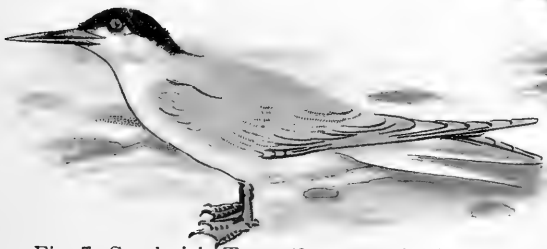

Fig. 7. Sandwich Tern *(Sterna cantiaca).*

Fig. 8. Common Tern
(Sterna fluviatilis).

part of the neck become slightly flecked with grey. In the Kittiwake the hind-toe has become reduced to the vanishing-point.

The BLACK-HEADED GULL (Plate XVI. fig. 4) differs from those just described in that during the summer months the feathers of the head develop a dark brown colour, which, when the bird is flying, gives the head the appearance of black, hence its name. Young birds in their first plumage may be readily distinguished by the fact that the smaller feathers of the wings are brown in colour, while the tail has a black bar across its tip. But the completely adult characters are assumed on the completion of its first year, and in this it contrasts strongly with the Herring- and Black-backed Gulls, which require years wherein to perfect their plumage.

During the winter months the Black-headed Gull has, for some years past, assembled in large numbers on the Thames, as far up as Kew, and on the ornamental waters of the London parks, adding greatly to the interest of life in London to those who, having a love for Natural History, are perforce compelled to live in town.

The small, fork-tailed, short-legged birds known as Terns are really very closely related to the Gulls, but they have relatively longer wings and a more graceful flight and fashion of procuring their food.

The species known as the COMMON TERN (Plate XVI. fig. 8) is the most abundant representative of the Tern tribe in Great Britain and Ireland, coming to us in the month of April and departing in the autumn. It also breeds abundantly in North America, from Labrador to Texas, though scarcely known on the Pacific Coast.

In some parts of England this bird is known as the "Gull-teaser," from its habit of chasing Gulls and compelling them to drop the fish they have just captured. This done, by a swift plunge the ill-gotten prize is seized before it reaches the water. But in catching prey in a more legitimate way it displays considerable skill, feeding upon young coal-fish and sand-eels, shrimps, and other crustaceans.

The eggs of this bird, like those of the Terns and Gulls generally, bear a close resemblance to their surroundings, and hence are said to be protectively coloured. And this is no less true of the downy nestlings. When full grown the Common Tern measures about 14 inches in length, but of this some $6\frac{1}{2}$ inches is made up by the long

tail, the outer feathers of which, like those of the Swallows, are much longer than the inner. Hence the Terns are often known as "Sea-swallows."

The LITTLE TERN (Plate XVI. fig. 6) in its general appearance resembles the Common Tern, from which, however, it may readily be distinguished, since it does not exceed $9\frac{1}{2}$ inches in length, and has the beak orange-yellow and tipped with black. In North America the Little Tern is represented by a very closely related species, the Antilles Tern ; the latter, however, may be distinguished by having the rump grey, and very little black on the back.

This is the smallest of the British Terns, and makes its appearance among us during the month of May, departing again in September and October.

The SANDWICH TERN (Plate XVI. fig. 5) derives its name from the place where it was first observed—Sandwich, in Kent—so far back as 1784. It is a regular visitor to Great Britain, arriving during March and April. Like the two species just described, the crown of the head in summer is black, while the beak is black, and yellow at the tip. The back, as in the other Terns and many of the Gulls, is of a beautiful pearl-grey, the under parts being white, but tinged with a most wonderful salmon-pink colour, which fades rapidly after death. The legs and feet are black ; and in this it differs again from the Terns just described.

Finally, we come to a group of very curious Gulls known as Skuas. These differ from the typical Gulls and Terns not only anatomically, and in their more sombre coloration, but also in their peculiar habits, which may be described as semi-parasitic. And this because these birds contrive to gain most of their food by chasing Gulls which have recently fed, and compelling them to disgorge their captures to avoid further buffeting. So expert a highwayman has the Skua become, that he will catch the fish dropped by his victim before it can reach the sea again.

Skuas also devour the eggs and young of any other birds which may have the misfortune to be breeding in their neighbourhood.

The nestlings of the various species of Skuas differ from those of Gulls and Terns in being dark, and whole coloured, not grey and mottled with black as in Gulls and Terns.

Buffon's Skua (Plate XVI. fig. 5), or the "Long-tailed Skua," as it is often called, from the great length of the middle tail-feathers, is found the whole way round the northern hemisphere, though it does not occur in any great abundance in Great Britain. On the east side of England, however, it is not infrequently met with. Over the Arctic regions of America it enjoys a wide range.

Altogether four species of Skua are to be found in Great Britain; but of these, the largest and finest species, the Great Skua, is well-nigh extinct, so far as these islands are concerned.

THE AUKS

The Auks—or, in other words, the Guillemots, Razor-bills, and Puffins—are among the most interesting of living birds; for there can be no doubt but that they are descended from some Plover-like ancestor, and that their present peculiarities of shape and structure were slowly acquired, in proportion as they became more and more aquatic, until, to-day, they have assumed a close resemblance to the far more ancient birds of the Order Pygopodes (p. 36). As divers, and in the skill they display in the capture of fish, which they chase for considerable distances under water, these birds have no rivals. They are never met with in fresh water, but frequent rocky coasts, where they live in enormous colonies.

The Guillemot (Plate II. fig. 5), the Razor-bill (fig. 9), the Little Auk (fig. 4), and the Puffin (fig. 3) are all British birds, though the Little Auk is only occasionally met with along our coasts. The Guillemot and the Razor-bill breed on the ledges of cliffs, laying, on the bare rock, but a single egg. The Puffin, on the other hand, chooses a burrow, seizing, as a rule, upon one dug either by a rabbit or a Petrel, and driving out the rightful occupants by the aid of its powerful beak. How they have dispossessed the Manx Shearwater we have already told on p. 38.

CHAPTER XI

THE PIGEONS

Order—COLUMBÆ

THE Pigeons, it is now generally believed, are to be regarded as very near relations of the Plover tribe, little as these two groups appear to have in common when judged from external characters alone. When, however, we come to study the anatomy of the Pigeons, we gain the true insight into their relationships.

Pigeons are, for the most part, short-legged, arboreal birds, whose young are for a long while extremely helpless and but sparsely covered with hair-like down. They never lay more than two eggs, and these are always white.

For the most part they are arboreal in their habits, and hence, probably, the peculiarly short legs. Certain forms, however, have taken to living on the ground, and in these, as in the Crowned Pigeons and a few others, the legs are much longer.

The extinct Dodo and the Solitaire were both gigantic Pigeons.

The Pigeons are remarkable from the fact that the inner walls of the "crop," which is of great size, are richly provided with blood-vessels, and during the breeding-season secrete a curious curd-like matter known as "pigeon's-milk," and on this the young are fed.

The RING-DOVE, or WOOD-PIGEON (Plate XVII. fig. 4), is the largest of the six species of Pigeon which are reckoned among our British Birds, measuring about 17 inches in length. The female is hardly distinguishable from the male, being only a very little smaller and rather duller in colour. This species may be distinguished by the white patch on the neck.

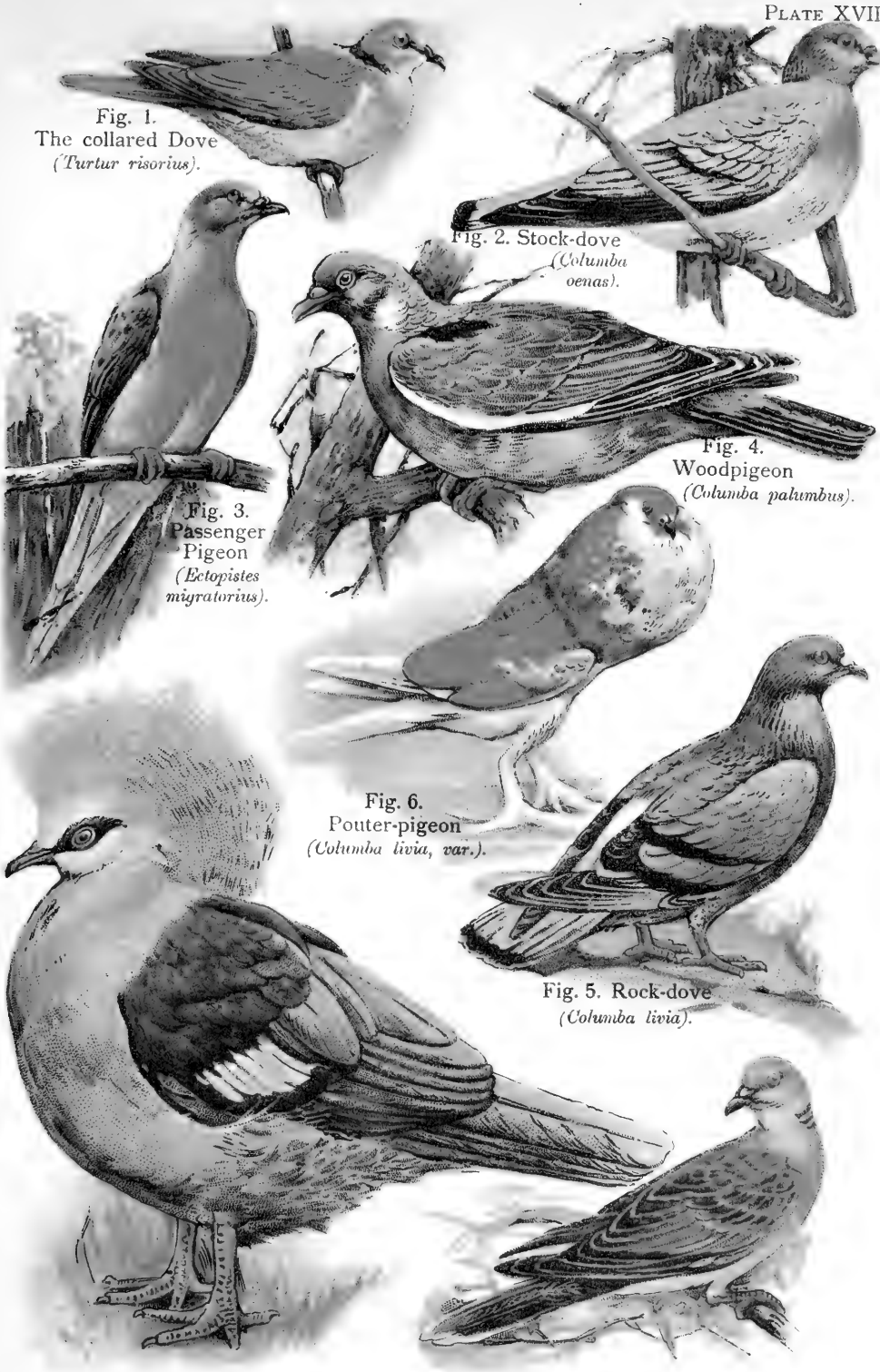

Fig. 1. The collared Dove *(Turtur risorius).*

Fig. 2. Stock-dove *(Columba oenas).*

Fig. 3. Passenger Pigeon *(Ectopistes migratorius).*

Fig. 4. Woodpigeon *(Columba palumbus).*

Fig. 6. Pouter-pigeon *(Columba livia, var.).*

Fig. 5. Rock-dove *(Columba livia).*

Fig. 8. Crowned pigeon *(Goura coronata).*

Fig. 7. Turtle-dove *(Turtur communis).*

Of late years this bird has become very common in London parks, where it shows not the slightest fear of man, though in the country it is a very shy and wary bird.

The STOCK-DOVE (Plate XVII. fig. 2) is a bird often confused with the species next to be described—the Rock-dove; but it may always be distinguished therefrom by the absence of the patch of white above the tail.

It has somewhat increased in numbers of late years, and shows a marked preference for districts where timber abounds.

Rabbit-burrows, holes in trees and cliffs, and matted ivy are the places chosen as nesting-sites.

Perhaps the most interesting of our Pigeons is the ROCK-DOVE (Plate XVII. fig. 5), since it is probably the ancestor of all our domesticated races. Readily distinguished by the double black bar across the wings and the white patch on the lower part of the back, this bird is to be found only in a truly wild state in places where caves or deep fissures exist. Comparatively rare in England, it is a common bird in Scotland, from St. Abbe's Head northward; while in the Shetlands and Orkneys it is still more common, and the same is true of this bird in Ireland, where it is met with in abundance along the west coast, finding most suitable breeding-places in the rugged cliffs facing the Atlantic.

Though partial to grain, this bird amply atones for depredations on corn, since it feeds largely on the roots of the couch-grass and the seeds of various troublesome weeds. In drinking, as with many other pigeons, it will occasionally, like Gulls, quench its thirst while floating down-stream!

The POUTER-PIGEON (Plate XVII. fig. 6) represents one of the most peculiar of all the products of the breeder. By long and careful selection this bird has acquired an enormous crop, and this is inflated whenever the bird is excited, as by the presence of a female. The long feathers of the legs have also been developed by the breeders' care in selecting those birds which had the biggest crops and legs most inclined to produce feathers. But the number of races of domesticated Pigeons are legion. The most striking of these varieties are perhaps the Pouter, Fantail, Homing, Tumbler, Barb, Owl, and Carrier.

The TURTLE-DOVE (Plate XVII. fig. 7) is to be met with in Great

Britain only during the summer months, when in certain parts, as in the eastern and midland counties, it is abundant.

The COLLARED, or BARBARY, DOVE (Plate XVII. fig. 1) is a near relative of the Turtle-dove, and is to be met with from Constantinople to India; it is also abundant in the Holy Land. The so-called "Turtle-dove" which is so commonly kept in cages is really the Collared Dove, though the domesticated birds now form a race apart from the wild species.

In one respect the most remarkable of all the Pigeon tribe is the PASSENGER PIGEON (Plate XVII. fig. 3), and this because of the incalculable numbers which were to be met with not a century ago in certain parts of the United States. A flock seen by the naturalist Wilson was estimated by him to consist of more than 2,230 millions! In the backwoods of Kentucky, Ohio, and Indiana these birds literally swarmed. The celebrated naturalist Audubon, in 1813, met with them crossing the barrens near Hardensburg in enormous hosts; so thickly packed were they flying, that they obscured the light of the sun at noonday as effectively as an eclipse!

Another naturalist, Brewster, describing the nesting-place of these birds in Michigan so recently as 1866, says: "It began near Petosky and extended north-east, past Crooked Lake, for twenty-eight miles, averaging three or four miles wide. The birds arrived in two separate bodies, the largest of which formed a compact mass of Pigeons, at least five miles long by one mile wide. The nesting-area extended for a distance of eight miles through hard-wood timber, then crossed a river, . . . and thence stretched through pine-woods about twenty miles." Many trees were piled with nests, so much so, that their boughs broke down under the weight thereof. To-day the Passenger Pigeon is almost extinct, so great is the persecution to which this bird has been subjected.

The largest of all living Pigeons is the GOURA, or CROWNED-PIGEON (Plate XVII. fig. 8). This bird is a native of New Guinea and some of the neighbouring islands, and is a quite familiar bird in Zoological Gardens. An even finer species is the Victoria Crowned-pigeon from Jobi and Mysori. Though it has several times bred in captivity, it does not thrive as well as could be wished, having regard to its great beauty.

CHAPTER XII

THE PARROTS AND CUCKOOS

Orders—PSITTACI AND CUCULI

With the Parrots we enter upon the description of a series of groups of birds quite distinct from those so far described, and these groups must be regarded as representing so many branches of a greater branch of the Avian tree of descent.

The Parrots themselves are a very ancient group, and have, moreover, undergone such deep-seated structural changes, especially in regard to the skull, that it is not easy to discover what their nearest relatives may be, though the Cuckoos are generally accorded this honour.

Among the Parrot's many striking peculiarities the beak is the most conspicuous. Not only is it a very powerful weapon, but it also plays a very important part as an organ of locomotion, as everybody who has ever seen a Parrot climb knows. From their peculiarly arboreal habits the legs of these birds have become very short; while the toes are arranged in pairs, two in front and two behind, and hence are said to be zygodactyle, or yoke-footed. The use of the foot in holding food is not peculiar to Parrots, for some Hawks and Owls and Gallinules also adopt a similar device.

While Parrots are among the most gaudily coloured of birds, there are some species which are quite dull-coloured.

Though the Parrots are commonly supposed to be peculiar in that they can raise the upper jaw, which moves on the skull by a hinge, this is not really so; many other birds also have the upper jaw similarly hinged. But the Parrot's beak is peculiar in this, that

the hooked tip, on its under surface, is curiously and symmetrically grooved by a series of very fine ridges, and these ridges form what is known as the " file."

The beautiful " bloom " which covers the feathers of some Parrots and the beak and white face of the African Grey Parrot is due to a kind of powder formed by the breaking up of what are known as powder-down feathers.

All Parrots breed in holes, and make no nest, except the Quaker Parrot of South America, which builds a large nursery of fine twigs.

Though we may regard the Australian region and the Malay countries as the headquarters of the Parrots, these birds enjoy a very wide distribution, being found in India and Africa as well as in America. Though no Parrot is now found in a wild state in Europe, this was not always so, as is proved by fossil remains.

Young Parrots are at first covered with a coat of thick down, and remain for a long while helpless in the nest.

The GREY, or AFRICAN PARROT (Plate XVIII. fig. 2), may be taken to represent the typical Parrot. This bird, so familiar as a cage-bird, ranges across Equatorial Africa, and has acquired the chief place among Parrots as a linguist.

The CAROLINA CONURE (Plate XVIII. fig. 1) is a North American species, which, at the beginning of the nineteenth century, used to range in summer as high as the shores of Lakes Erie and Ontario; to-day it is almost, if not quite, extinct, having been ruthlessly persecuted to supply " ornaments " for women's hats !

The gaudy Macaws represent the largest of the Parrot tribe, and are natives of South America.

The best-known species are, perhaps, the BLUE and YELLOW MACAW (Plate XVIII. fig. 3), ranging from Guiana in the east to Columbia in the west, and the RED and BLUE MACAW (Plate XVIII. fig. 4), a huge bird inhabiting Central and South America as far as Bolivia. It is, like the former species, a common bird in captivity, and is easily tamed.

Very little is known about the habits of Macaws in a wild state, but they are said to possess great powers of flight, rising high in the air and travelling long distances in search of food, which consists of various kinds of fruits. The sexes are alike in colouring.

Fig. 1.
Carolina
Conure
(Conurus carolinensis).

Fig. 3. Blue and
yellow Macaw
(Ara ararauna).

Fig. 2.
Grey Parrot
(Psittacus erithacus).

Fig. 7.
Budgerigar
(Melopsittacus undulatus).

Fig. 4.
Red and
blue Macaw
(Ara macao).

Fig. 6.
Ganga Cockatoo
(Callocephalon galeatum).

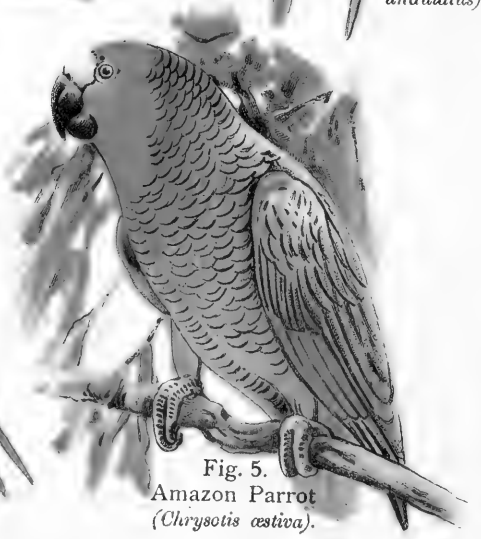

Fig. 5.
Amazon Parrot
(Chrysotis æstiva).

The Amazon Parrot (Plate XVIII. fig. 5) is a species not found north of Brazil. Flying in small flocks, it feeds on oranges, plantains, berries, and other fruit. About forty different kinds of Amazon Parrots are known.

Australia is the home of the Cockatoos, of which the White Cockatoos are the best-known species. The Ganga Cockatoo (Plate XVIII. fig. 6), a bird frequently seen in confinement, is a comparatively sober-coloured bird.

The little Budgerigar, or Grass Parakeet (Plate XVIII. fig. 7), is also an Australian bird, and is rather more of a ground-feeder than most Parrots. It is an extremely common cage-bird, breeding readily in confinement.

THE CUCKOOS

The Cuckoos are generally regarded to-day as relatives of the Parrots, and this on account of anatomical characters, rather than any likeness in external form. The only point indeed wherein Parrots and Cuckoos resemble one another, externally, is in the fact that both have the toes arranged so that two are directed backwards and two forwards, the backward toes being the hind-toe and the outer toe. But many other birds belonging to quite different groups have a similar arrangement of the toes, which is known as zygodactyle—meaning, yoke-footed.

There are a very large number of species of Cuckoos, showing a surprising range both in size and coloration. Some are wholly black, some resplendent in rich metallic emerald-green and copper, while others are clad in more sober hues of grey.

Africa and India are richest in Cuckoos; while America is the home of some of the most remarkable members of the order. Of these the most striking are the Chapparal-cock, or Road-runner, of the South-western United States and Mexico; and the Ani and Guira Cuckoos, the former extending from the Southern United States southwards all over South America, and the latter being confined to South America.

The Road-runner is a ground-cuckoo—that is to say, it frequents the ground rather than trees and underwood, and consequently has long legs, all the other Cuckoos having conspicuously short legs.

But the best known of all the Cuckoos is the bird called in Great Britain the "COMMON" CUCKOO (Plate **XXIII.** fig. 4), a bird which is found also over the greater part of the Old World. This fame is due partly to its wonderful call, "Cuckoo, cuckoo," so dear to all lovers of the country, and partly to its curious parasitic habits. For this bird, as everybody knows, thrusts the charge of its offspring upon other birds, choosing as its dupes such species as Robins, Hedge-sparrows, Wagtails, Thrushes, Larks, Meadowpipits, and Red-backed Shrikes, etc. The young Cuckoo, almost as soon as hatched, ejects the offspring of its foster-parents from the nest, and thereby secures an abundance of food, for its appetite is insatiable.

The curious resemblance which the Common Cuckoo bears to the Sparrow-hawk, both in flight and coloration, serves it in good stead when seeking for victims on whom it is desired to thrust its eggs. The male Cuckoo attracts the attention of the birds to be victimised, and draws them away from their nest, by affecting to expose itself to their attacks; the fond fools, in defence of their home, not hesitating to buffet even the Sparrow-hawk. So soon as they have left the neighbourhood of the nest in pursuit of what they believe to be the fleeing marauder—the Sparrow-hawk—the female quietly steals up and deposits her eggs with those of the absent birds; she having first dropped it upon the ground, and then picked it up in her bill. When the infuriated pair return, they either do not notice the additional egg, or are so thankful to find the nursery of their treasures intact, that they do not interfere with the egg which has thus cleverly been foisted upon them.

CHAPTER XIII

THE ROLLERS, MOTMOTS, KINGFISHERS, BEE-EATERS, HOOPOES, AND HORNBILLS

Order—CORACIÆ

THE Order Coraciæ comprises a remarkable assemblage of birds, mostly of brilliant plumage, and, in the case of the Hornbills, bizarre in shape.

The Rollers, which look rather like gorgeously coloured members of the Crow tribe, have representatives over all the temperate parts of Europe, the whole of Africa, and Central and Southern Asia. They are extremely beautiful birds, intense blue and green being the dominant colours of their plumage.

The COMMON ROLLER (Plate **XIX.** fig. 6) occasionally strays to Great Britain, and hence is to be reckoned a British bird. Though Rollers mostly hunt by day, they may frequently be seen, where they are plentiful, hawking for insects at dusk. During the courting-season the males practise a very curious flight, turning and twisting in the air, the while expanding and contracting the tail. But both sexes have a habit of "rolling," or turning somersaults, in the air, hence their name of "Rollers." They breed in holes in walls, roofs of houses, and tree-trunks, laying several glossy white eggs, for which they make little or no nest—at best but a mass of roots, grass, hair, and feathers.

The Motmots are South American birds, green in colour, and having a peculiarly notched beak. But they are unique among birds in that the male deliberately bites away a part of the middle of the webs of the two central tail-feathers, leaving a long, spoon-

shaped end to each feather. No other bird is known thus to trim its plumage.

Among the most beautiful of living birds are the Kingfishers, which, in the matter of size, present a wide range, the largest species, the Australian "Laughing Jackass," being as large as a Jackdaw, while the smallest are not so big as Sparrows.

In coloration they present a wonderful variety, the most sombre being the Laughing Jackass; black and white; blue and white; red; and blue and red are the chief types.

One of the most familiar is the COMMON KINGFISHER (Plate XIX. fig. 2). This bird is yet happily fairly common in parts of Great Britain, in spite of the fact that it is ruthlessly shot down by people who have charge of fish-hatcheries; and by others who kill them in order that they may be made up into atrocities to be worn in the hats of thoughtless women as "ornaments"!

The Common Kingfisher breeds in holes in banks, generally by the side of some stream. No nest is made, but the eggs, which are white, and wonderfully translucent, are laid on a bed of fishbones and the hard parts of crustacea ejected by the birds after all the flesh therefrom has been digested. Some Kingfishers, however, feed not on fish, but on worms, insects, and reptiles.

While the Kingfishers present some species which are dull coloured, the Bee-eaters, their near relatives, are all brilliantly coloured birds, green, blue, and a wonderful rose-red being the principal types, and these colours may be relieved by patches of red or yellow. They are confined to the temperate and tropical portions of the Old World.

Bee-eaters breed in holes in banks, or even in tunnels bored almost vertically into the level ground. These excavations may extend from 3 to as many as 10 feet. The eggs are white.

The COMMON BEE-EATER (Plate XIX. fig. 4) occurs occasionally in Great Britain, when it is promptly slaughtered by the reckless "collector." Like all the members of the family, this bird is an insect-eater, and shows a partiality for bees, and hence, in Spain, where it is common, is rather a nuisance at times to bee-keepers. When seen in flocks, this bird affords a surpassingly beautiful spectacle.

Fig. 1.
Homrai Hornbill
(Buceros bicornis).

Fig. 2. Kingfisher *(Alcedo ispida).*

Fig. 3.
Toco Toucan
(Rhamphastus toco).

Fig. 4.
Bee-eater
(Merops apiaster).

Fig. 6. Roller *(Coracias garrulus).*

Fig. 5.
Narina Trogon
(Hapaloderma narinâ).

What they may lack in brilliancy of plumage the Hoopoes and Hornbills atone for in quaintness, though even in the matter of colour the Hoopoes may hold their own with their more gaudy relatives.

These two families, as will be shown presently, are in many ways remarkable.

The Hoopoes are singularly graceful birds, having long curved beaks and very beautiful plumage.

The COMMON HOOPOE (Plate XXII. fig. 8) occurs at rare intervals in Great Britain. But for collectors, it might be much more frequently met with, since it has bred more than once in this country. The most striking feature of this bird is its beautiful crest, which can be raised or depressed at pleasure. Conspicuous though its colours appear to be, they are really not so, for when the bird is alarmed it has the habit of throwing itself flat upon the ground and spreading out its wings, when it at once loses all resemblance to a bird !

Hoopoes breed in holes, and their nests—composed of sticks, straw, and a few feathers—soon assume a most insanitary condition, and give forth an almost overpowering smell. This is intensified by the fact that the oil-gland of the sitting female, and of the young, gives forth a most nauseous smell. While sitting, the hen, who rarely leaves the nest, is fed assiduously by her mate. Their food consists of insects and worms. The larger insects when captured are tossed in the air and caught again before being swallowed.

Tradition has it that these birds once wore crowns of gold, and on this account were greatly persecuted. Accordingly they went to King Solomon and sought relief. He gave them instead a crown of feathers ; but this seems to have afforded but an indifferent protection, for they are still shot for the sake of these crowns.

In Africa black Hoopoes, with red beaks and no crown of feathers, occur. The black is brightened by a metallic gloss of purple and green, relieved by a white wing-patch and white markings on the tail.

The Hornbills are to be reckoned among the most remarkable of living birds, having bills of enormous size, and often still further exaggerated by a huge casque which extends backwards over the top of the head.

These birds are natives of Africa and India, and the Malay regions to the Solomon Islands. In spite of their enormous size, their beaks

are extremely light, the bone being of the delicacy of filigree work, and covered externally by the horny sheath.

The nesting habits of the Hornbills are not less remarkable than their beaks. After the eggs have been laid and the female begins to sit, the male proceeds to plaster up the hole by which she entered with mud, leaving a small aperture out of which she thrusts her bill to receive her daily rations dutifully brought by her lord and master. What is still more strange, this food is brought up from his stomach enclosed in a membrane, or bag. She remains imprisoned till the young are fledged.

The HOMRAI HORNBILL (Plate **XIX.** fig. 1), a Malayan species, may serve as a good example of this curious group of birds.

There is one extraordinary exception to the rule with regard to the lightness of the structure of the beak, and this is furnished by the Helmet Hornbill (*Rhinoplax vigil*) of the Malay countries. The fore part of the great helmet which surmounts the beak of this bird is of great thickness and exceeding hardness, so much so, that it is greatly prized by Eastern artists, who make therefrom carved ornaments of various kinds, many of which are of great beauty.

Fig. 1. Eagle Owl
(Bubo ignavus).

Fig. 2.
Tawny Owl *(Syrnium aluco).*

Fig. 3.
Long-eared Owl
(Asio otus).

Fig. 6. Barn Owl
(Strix flammea).

Fig. 4. Little Owl
(Athene noctua).

Fig. 5. Snowy Owl
(Nyctea nivalis).

CHAPTER XIV

THE NIGHTJARS, SWIFTS, AND HUMMING-BIRDS

Orders—CAPRIMULGI, CYPSELI

THOUGH at first sight no one would suppose so, yet it is now an established fact that the Nightjars are near relatives of the Owls. They may be regarded, indeed, as representing the ancestral stock from which the Owls descended.

The most striking feature of the Nightjars is the huge size of the mouth, and the remarkably small beak, which is fringed on either side by long, stiff bristles. These birds also have large eyes, and extremely small feet. The former are necessary, because the food is largely sought during the twilight hours; while the smallness of the feet is due to the fact that all their food is procured while on the wing, and when not flying they remain motionless, either squatting on the ground or along the bough of some tall tree. We say along the bough advisedly, for these birds are peculiar in that they do not perch like other birds, with the body across the bough, but along it. This unusual method of perching is adopted for protective purposes. For the plumage, which is always of some brown hue, pale or dark, is, as it were, freckled or powdered with grey, thereby enabling the bird so closely to harmonise with its surroundings as to become well-nigh invisible.

The COMMON NIGHTJAR (Plate XXI. fig. 6) is not only a well-known British bird, but is one dear to all lovers of country life. One of the latest of our summer visitors, and one of the earliest to leave, this bird adds greatly to the charm of the sultry days of summer-time by its wondrous flight and still more wonderful "churring" note.

Two creamy white eggs, marbled and veined with brown and lilac, are laid, and these are deposited on the bare ground of some heath. The food of this bird consists entirely of large insects. During flight the wings are sometimes brought sharply together over the back, giving rise to a loud clap.

The Nightjar is even more commonly known as the "Goat-sucker," from its supposed habit of sucking the milk of goats and cows—a ridiculous superstition, having no foundation in fact.

Our Nightjar winters in Africa, and is also to be found in Asia Minor, Palestine, Persia, Turkestan and Afghanistan, and North-western India.

America is much richer in Nightjars than is Great Britain, and of these, the North American "Whip-poor-will," and the "Night-hawk" (*Chordeiles virginianus*) are the best known.

THE SWIFTS

The Swifts bear a close superficial resemblance to the Swallows (see page 113), with which, indeed, they are always associated in the popular mind. As a matter of fact, however, they are in no way related, the Swifts being near allies of the Nightjars. They are long-winged birds, have tremendous powers of flight, and extremely short legs, so much so that it is only with extreme difficulty that they can rise from level ground.

One of the best known of the group is the COMMON SWIFT (Plate XXI. fig. 2), a bird which occurs in abundance in Great Britain during the summer months, adding greatly to the charm of this season by the wild screams it utters as it races along, now near the ground, now high in air, as if mad with the joy of living. The Swifts come to us in April, and leave again in August or the early days of September. Like the Nightjars, they are entirely insect-feeders, catching their prey while on the wing.

This bird, which is known also as the "Deviling," occurs all over Europe, and parts of Asia and Africa. Occasionally Great Britain is visited by a very much larger species—the Alpine Swift.

The so-called "Chimney-swallow" of Eastern North America is really a Swift. Ranging north in summer to Labrador and the fur countries, it extends to the south of the United States in winter.

Fig. 1. Waxwing
(Ampelis garrulus).

Fig. 3. House Martin
(Chelidon urbica).

Fig. 2.
Swift
(Cypselus apus).

Fig. 4. Swallow
(Hirundo rustica).

Fig. 5.
Sand-martin
(Cotile riparia).

Fig. 6.
Night-jar
(Caprimulgus europaeus).

Fig. 8. Cock of the Rock
(Rupicola crocea).

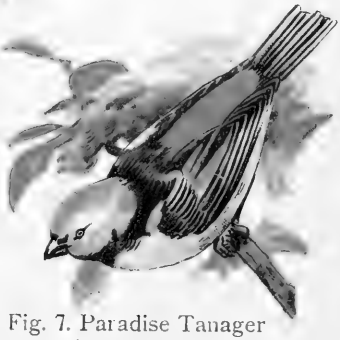

Fig. 7. Paradise Tanager
(Calliste tatao).

THE HUMMING-BIRDS

That the Humming-birds and Swifts are very closely related no one now doubts, unlike though they be in external appearance.

Confined to the American Continent, and ranging from the extreme south thereof as far north as Canada, these birds are by no means to be regarded as the jewelled darlings of the Tropics, though it is indeed in tropical America that they are to be met with in the greatest plenty. Numbering no less than four hundred different species, they present a relatively great range in size, the largest measuring some $9\frac{1}{2}$ inches in length, while the smallest is but little bigger than a bumble-bee. In the matter of the shape of the beak and tail they present hardly less variety. Thus the beak may be short and straight, curved upwards or downwards, or drawn out into a great probe, considerably longer than the whole body. Similarly, the tail may be short and rounded or long and Swallow-like, and in some species these long tail-feathers cross one another in graceful curves, while in others these crossed feathers are drawn out into mere threads, terminating in oval expansions.

But it is on account of the exquisite beauty of their plumage, resplendent in the most gorgeous metallic hues, that the humming-birds have become so famous. No other birds can vie with these fairy-like creatures in this respect.

As we have already remarked, no less than 400 different kinds of humming-birds are known, and of these five have been taken at random for illustration here. With such a dazzling wealth of numbers, choice becomes impossible. One of the most elegant, though by no means the most gorgeous of all, is the SUN-GEM HUMMING-BIRD (Plate XXII. fig. 1), a native of Brazil.

The COQUETTE HUMMING-BIRD (Plate XXII. fig. 2) is a native of Central America. Ten different species of Coquette Humming-birds are known, ranging from Mexico southwards. They are easily distinguished by their crested heads and the "ruff," which projects from the throat.

Perhaps the most gorgeous birds in existence in so far as the colouring of the tail is concerned, are the COMET HUMMING-BIRDS

(Plate XXII. fig. 3). Three species of large size are known. They inhabit Peru, Bolivia, and the Argentine Republic.

The "KING" HUMMING-BIRDS well deserve their name, for they are hardly surpassed by any other members of this group in brilliancy of plumage. They are distinguished by the two long, middle tail-feathers, which cross one another in graceful fashion. The species here figured (Plate XXII. fig. 4) is a native of the Rio Negro.

Not the least remarkable of the many peculiarities which distinguish the Humming-bird is the curious way in which some develop a kind of "powder-puff" around the legs. This is well seen in the RACKET-TAILED HUMMING-BIRD (Plate XXII. fig. 5), of which six species are known, inhabiting South America, from Venezuela and Columbia, through Ecuador and Peru, into Bolivia.

As we have already remarked, these birds are by no means confined to the Tropics. They have been seen flitting about the fuchsias of Terra del Fuego in a blinding snowstorm, and they are met with on the lofty mountains of Chimborazo as high up as 16,000 feet, dwelling in a world of almost continuous hail, sleet, and rain!

These wonderful birds feed chiefly on insects which harbour amid the petals of honey-bearing flowers. To procure these they have developed a most remarkable tubular tongue of complex structure, which is so contrived as to suck up the honey and insects at the same time.

Beautiful as these birds appear in pictures, they are far more beautiful when seen themselves, for no picture can possibly represent the superb play of colour which takes place with every movement of the body. Though stuffed specimens lose much of their beauty, they retain sufficient of their glory to dazzle us. At times these tiny bodies glow, as with some internal fire; at others they appear dull. As the spectator changes his place, green turns to gold, and gold to black, and back again to gold and green, and a dozen other intermediate hues, according to the intensity and incidence of the light. One must see humming-birds to realise their surpassing beauty; no brush can depict them, nor can words describe them. Yet this beauty is to them a fatal gift, for the vanity of women has caused a price to be set on their heads, and tens of thousands are slain every

Fig. 1.
Sun-gem
Humming-bird
(Heliactinus cornutus).

Fig. 2.
Coquette
Humming-bird
(Lophornis ornata).

Fig. 4. King
Humming-bird
(Topaza pella).

Fig. 3.
Comet Humming-bird
(Sparganura sappho).

Fig. 6. Wallcreeper
(Tichodroma muraria).

Fig. 5.
Racket-tailed Humming-bird
(Steganurus underwoodi).

Fig. 7.
Tree Creeper
(Certhia familiaris).

Fig. 8. Hoopoe *(Upupa epops).*

Fig. 9. Nuthatch *(Sitta caesia).*

year, to supply the millinery markets of Europe, whereby the vanity of a certain section of the "gentler" sex may be gratified.

Somehow Humming-birds will not thrive in confinement, though the attempt to rear them has many times been made by those who have had great experience in keeping birds in captivity: in no case have these fragile creatures lived more than a week or two.

CHAPTER XV

THE OWLS

Order—STRIGES

By the older naturalists the Owls were regarded as near relatives of the Accipitrine birds—such as Hawks and Eagles. And this because of the similar beak and claws and methods of feeding, which all possess in common.

We know now, however, that this resemblance is misleading, and has been brought about by the pursuit of similar habits—preying on other live animals. The Owls, it has been conclusively shown, are really very closely related to the Nightjars.

Owls are remarkable for the peculiar softness of their plumage, which gives them an absolutely noiseless flight, whereby they are enabled, in the gloaming of the falling night, to approach their prey without giving the alarm. This prey consists mainly of mice and rats, varied occasionally by large beetles. Some species catch fish!

The Great Eagle Owl (Plate XX. fig. 1) is a bird occasionally met with in Great Britain. It is a remarkably handsome species,

Fig. 14.—Foot of an Owl showing the feather-clad toes.

and has the toes feathered quite down to the claws. Most Owls, indeed, have the feet so clothed.

The Snowy Owl (Plate XX. fig. 5) also occurs as a straggler in Great Britain, but is really a native of the Arctic regions, both of

Europe and America. Unlike most of the Owls, it hunts by day, feeding on mice and lemmings; but in winter, when this prey fails it, hares, grouse, and ducks are captured, and, it is said, even fish. The Snowy Owl, like the Eagle Owl, possesses long tufts of feathers, which can be raised like a pair of ears at the will of the bird; but in the case of the Snowy Owl they appear to be but rarely brought into play.

Though it occurs occasionally in a wild state, the LITTLE OWL (Plate XX. fig. 4) had never been known to breed in Great Britain. Many attempts have been made, however, of recent years to induce this little bird to take up citizenship with us, considerable numbers having been turned down by Lord Lilford and others. These have bred freely, and the race seems to be increasing with us.

In the TAWNY OWL (Plate XX. fig. 2) we have a species met with both in Great Britain and America. It is an interesting bird, inasmuch as it is often met with in two distinct phases of plumage, some individuals being very grey, others red, in hue. This species is further peculiar in that the apertures of the ears are not alike on the two sides of the head, though both agree in being covered by a large flap of skin known as the "operculum."

The Tawny Owl is subject to a ruthless persecution at the hands of Game-preservers and other ignorant people, who, from lack of intelligence or incapability of reasoning, refuse to believe those who assure them that neither this Owl nor the Barn Owl is injurious to Game-birds.

The LONG-EARED OWL (Plate XX. fig. 3) is another common British Owl, and in this species the apertures of the right and left ears are still more asymmetrical; they are, indeed, with those of the short-eared species, more complex than in any other Owl except Tengmalm's Owl.

The "Long-" and the "Short-eared" Owls, it may be remarked, though very similar in appearance, yet differ conspicuously in their nesting-habits, inasmuch as while the first chooses to deposit its eggs in some old squirrels' drey, or some deserted nest of a Ring-dove, Magpie, Crow, or Heron, the short-eared species makes its nest on the ground. In the fens this is a mere hollow formed on the top of a clump of sedge or in the side of a mass of mown weeds; but on the

moors the eggs are laid among the heather. Usually not more than six in number, on occasions as many as twelve are laid. During the great vole plague, which occurred in Scotland, for example, a few years ago, these birds assembled in large numbers over the stricken area, and finding an abundance of food reared broods of double the normal numbers, and performed this feat twice during the year !

The Barn Owl (Plate XX. fig. 6) is not only an extremely handsome species, but forms a group by itself apart from the rest of the Owls. In its distribution it is cosmopolitan, though in parts of its range it has become stationary, and has accordingly assumed more or less marked differences of coloration. Like the Tawny Owl, its eyes are almost black, bright orange-yellow being the colour of the iris in nearly all the Owls. This bird, from its note, is often known as the Screech Owl.

The young Barn Owl is at first clothed in a downy coat of snowy white, and this is replaced by a plumage indistinguishable from that of the adult. In most, if not all, other Owls, however, the first coat of down-feathers is replaced by a plumage exactly intermediate between nestling-down and true feathers, and this is worn till October, when it is shed and succeeded by normal feathers.

CHAPTER XVI

TROGONS, TOUCANS, AND WOODPECKERS

Orders—TROGONES AND PICI

WHAT are the precise relationships of these birds no one has yet decided, though probably all are akin. The Toucans and Woodpeckers are certainly more nearly related one to another than to the Trogons, which form a rather isolated group.

The Trogons are represented by many species, some of which are of surpassing beauty. Short-beaked, wide-mouthed, and short-legged, these birds are tree-dwellers and fruit-eaters, and enjoy a fairly wide distribution; inasmuch as, while some are natives of tropical America, others occur as resident species in Africa, a large part of India, and the Malayan countries. In ancient times they even occurred in Europe, since fossil remains have been found in France.

The Trogons are "yoke-footed" birds, like Cuckoos and Parrots for instance; but they differ therefrom, as well as from all other known birds, in that it is the first and second, instead of the first and fourth toes which are directed backwards.

The NARINA TROGON (Plate XIX. fig. 5) is an African species, ranging from North-east Africa to Cape Colony and Angola. The female is much duller in plumage. It is a very shy bird, keeping to the recesses of the forest, and making a curious call, which has been likened to the noise made by "a poodle with a cold."

The most beautiful of the Trogons is the Quetzal of South America—from Guatemala to Veragua. Of a brilliant green and blue above and gorgeous crimson below, this wonderful bird is still further

ornamented by long plumes from the wings, and a long and gracefully flowing tail. In olden times the native chiefs, and they alone, wore these plumes on days of high festival.

THE TOUCANS

Like the Hornbills, the Toucans have enormous beaks, and on this account are very commonly mistaken one for another by those who are not experts. As a matter of fact they are by no means closely related.

There are several different species of Toucans, some of which are sober-coloured enough; but for the most part they are rather richly coloured, while in size they range from birds rather larger than a large thrush up to 2 feet in length.

The great beak is really extremely light, being formed of a most delicate filigree-work of bone, ensheathed in a very thin case of brightly coloured horn, which is "serrated" along its cutting edges. They have the curious habit of sleeping with the tail cocked upwards, so as to lie almost flat upon the back. All are fruit-eaters; but this diet is varied by insects, and occasionally small birds and mammals.

One of the largest of all the Toucans is the Toco (Plate XIX. fig. 3). It enjoys a wide distribution in South America, and is met with in large flocks.

THE WOODPECKERS

The Woodpeckers are an extremely interesting group of birds, and this because they illustrate, in a remarkable degree, what is meant by "adaptation to environment." That is to say, they show, by their many singularities of structure, that they have become changed, or "adapted," so as to fit them for a quite peculiar mode of life. The beak, the tail, and the feet are the most obvious of these changes. The first named is shaped like a pick, and has the horny sheath of unusual density. By its means they are enabled to break away the bark and wood of trees for the purpose of obtaining insects sheltering therein, or for excavating holes designed for nurseries for

Fig. 1. Grey-headed Green Woodpecker *(Gecinus canus).*

Fig. 4. Common Cuckoo *(Cuculus canorus).*

Fig. 5. Red-headed Woodpecker *(Melanerpes erythrocephalus).*

Fig. 2. Green Woodpecker *(Gecinus viridis).*

Fig. 6. Wryneck *(Jynx torquilla).*

Fig. 7. Lesser-spotted Woodpecker *(Dendrocopus minor).*

Fig. 3. Ivory-billed Woodpecker *(Campophilus principalis).*

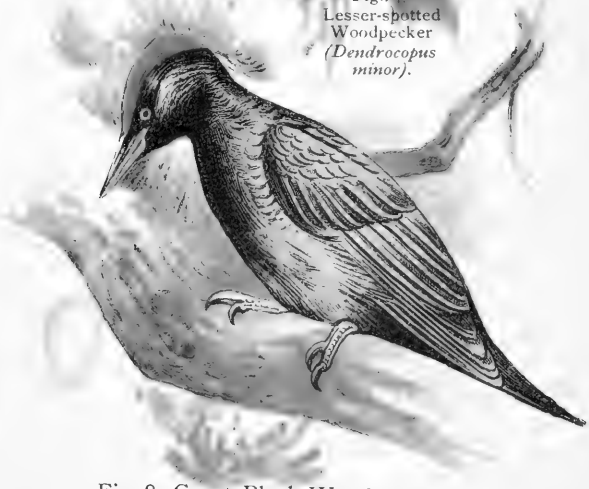

Fig. 8. Great Black Woodpecker *(Picus martius).*

their young. The toes are placed two in front and two behind, and are furnished with long claws, which serve the purpose of grappling-irons. Finally, the tail-feathers are of a curiously spiny character, and serve as supports when the bird, having firmly fixed itself by its claws, begins its work of excavation. The Woodpeckers are, in short, essentially tree-dwellers, and after a very peculiar fashion, for they spend most of their lives, not in perching on the boughs, but in climbing up and down the trunk. The spiny tail-feathers are developed in proportion to the amount of hammering which must be performed to gain a livelihood. They afford, in short, a very effective leverage during the time that the beak is being used as a "pick."

But the peculiarities of the Woodpeckers do not end with these external characters. The tongue for example is of enormous length, and the roots, or supports thereof, are no less excessively developed, so much so that they curve round and over the skull, to be finally stowed away in a channel above the beak. This tongue is used as a trap for the capture of ants and other insects. Thickly covered with a sticky saliva, which has been compared to bird-lime, this wonderful and worm-like organ is suddenly thrust out amid swarms of ants, which are borne back into the mouth, struggling helplessly. This saliva is formed by a pair of enormous glands on either side of the head.

In Great Britain three species of Woodpeckers are commonly met with. Of these, the best known perhaps is the GREEN WOODPECKER (Plate XXIII. fig. 2), also known as the "Yaffle." The female has black upon the cheeks instead of red.

The GREY-HEADED GREEN WOODPECKER (Plate XXIII. fig. 1) is a near relative of the species just described, and is common on the Continent of Europe.

The LESSER SPOTTED WOODPECKER (Plate XXIII. fig. 7) is also a British bird, but, owing to its small size and its partiality for tall trees such as elms and poplars, commonly escapes notice. It is more frequently met with in the southern parts of England, being rather common near London and along the valley of the Thames. In Ireland it is rare. Its near relative, the Great Spotted Woodpecker, is a much larger bird, and is nowhere abundant in Great Britain.

There have been many recorded instances of the occurrence in Great Britain of the GREAT BLACK WOODPECKER (Plate XXIII. fig. 8), but in every case investigation has shown that some mistake has been made. It is a relatively enormous and very handsome bird, and has more than once been imported into this country for the purpose of acclimatising it, but without success.

America is peculiarly rich in Woodpeckers, a large proportion of the three hundred and odd known species occurring either in the northern or southern portions of this great continent. Furthermore, the American species display a marvellous diversity of plumage. Woodpeckers, however, occur all over the world, except the Australian region, Madagascar, and Egypt.

The IVORY-BILLED WOODPECKER is an American species, measuring some 20 inches in length. It is met with in the Gulf States and Lower Mississippi Valley (Plate XXIII. fig. 3).

The RED-HEADED WOODPECKER (Plate XXIII. fig. 5) is another American species common in Arizona. Handsome though it is, it is surpassed, perhaps, by the Golden Woodpeckers of the genus *Colaptes*.

Though in its coloration unlike the typical Woodpeckers, the WRYNECK, or "CUCKOO'S-MATE" (Plate XXIII. fig. 6), nevertheless, is of the Woodpecker tribe. In the soft mottled-grey and brown

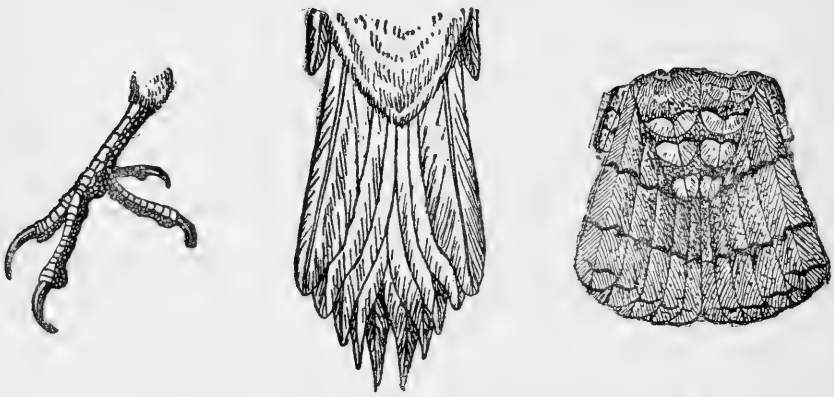

Fig. 15.—Foot and tail of Woodpecker, and tail of Wryneck. Note the marked difference in the shape of the two tails, and the zygodactyle foot.

colours of its plumage this bird resembles rather the Nightjars. The tail-feathers, too, as may be seen in the annexed figure, are not stiff

and pointed, as in the typical Woodpeckers, and this because these birds never use their beak, which is small and delicate, as a pick, as do the true Woodpeckers ; hence they have no need of support from spiny tail-feathers. But the Wryneck is undoubtedly a Woodpecker, in spite of these differences, as is shown, among many other things, by the structure of the tongue, which agrees with that of all other Woodpeckers in its great length, and in the use to which it is put.

The Wryneck comes to us in March, or more usually April, from Africa, where the winter is spent.

Like all the other Woodpeckers, the Wryneck lays several glossy white eggs in the hollow of some decaying tree, making no nest, but using for this purpose the rotten wood at the bottom of the hole. When disturbed the sitting-bird makes a loud, hissing noise, which induces the disturber to suppose that the hole is occupied by a snake, and this is enough to secure freedom from further interference ! On this account, as well as from the remarkable way in which this bird raises the feathers of the head and twists its neck, the name " Snake-bird " has been bestowed upon the Wryneck. When taken in the hand, the Wryneck, like the Landrail and some other birds, feigns death so successfully that it almost invariably, by this ruse, contrives to escape from its captors.

CHAPTER XVII

THE PASSERINE BIRDS

Order—PASSERIFORMES

In this chapter we shall describe some of the more remarkable of what are known as the Passerine, or Perching-birds. These, though preserving a remarkable uniformity in so far as their anatomical characters are concerned, present an amazing variety in their more superficial characters, such as coloration, and the form of the beak, so much so that nearly six thousand distinct species are known to Science.

Though all are essentially tree-dwellers, a large number of species have now come to pass much of their time in low scrub or in the open country. Some possess wondrous powers of flight, others are almost flightless.

This great series may be divided into two more or less sharply defined groups, based partly upon the structure of the syrinx, or voice organ, and partly upon other anatomical characters.

The first of these two large groups may be sub-divided so as to form three smaller groups, distinguishable partly by means of characters afforded by this same voice-organ, and partly by other anatomical characters, all of which are so complicated as to be beyond the scope and purpose of this little volume.

The first of the two large groups just referred to forms the—

Sub-order—CLAMATORES

The birds herein placed, though regarded as non-singing birds, yet include a few species with melodious voices ; though none have

Fig. 1. Marsh Warbler *(Acrocephalus palustris).*

Fig. 3. Redstart *(Ruticilla phoenicurus).*

Fig. 4. Wood Wren *(Phylloscopus sibilatrix).*

Fig. 2. Black Redstart *(Ruticilla titys).*

Fig. 5. Lire-bird *(Menura superba).*

Fig. 6. Wren *(Troglodytes parvulus).*

Fig. 7. Golden-crested Wren *(Regulus cristatus).*

Fig. 8. Icterine Warbler *(Hypolais icterina).*

Fig. 9. White throat *(Sylvia cinerea).*

Fig. 10. Black-cap *(Sylvia atricapilla).*

a song comparable to that of such musicians as the Nightingale or the Thrush or the Mocking-bird. But it is not, we may repeat, the quality of the song so much as the number of the song muscles and their arrangement that is regarded in this connection.

The lowliest of the Clamatores are the birds known as the Broad-bills, or Eurylæmi, some of which are very beautiful. Very nearly allied to these are the Cotingas ; and of these the most gorgeous is perhaps the COCK-OF-THE-ROCK (Plate **XXI.** fig. 8). This bird, a native of Guiana and Amazonia, is as remarkable in its love-making as in its coloration. When courting, some twenty or so, males and females, gather together, when the males immediately commence a weird kind of dance, during which they droop their wings, wave their crests from side to side, and hop along with most peculiar steps.

Nearly allied to the Cock-of-the-rock are the Bell-birds, also of South America. Of the four species known, all are remarkable. One species, pure white in colour, has a long, fleshy wattle, hanging from the base of the beak like the wattle of a turkey. When the bird is excited, it becomes turgid, and stands straight up in the air ! But beside this it also possesses a remarkable voice, a gift, however, which it shares with its relatives. The NAKED-THROATED BELL-BIRD (Plate XXV. fig. 3) may serve as an example of this. The home of this bird is in Brazil, the gloomy forests of which are made to resound with its wonderful notes. These resemble the sounds made by some clear ringing bell, or, according to some travellers, the sound produced by a blacksmith when he strikes a piece of steel on an anvil. The song is heard at all hours of the day, and when, as often happens, several of these birds are in the same neighbourhood, and begin singing against, and answering, one another, a most wonderful concert is the result.

The American "Wood-hewers," Oven-birds, Tyrant-birds, and a number of other related forms belong to this group, but space forbids a more lengthy reference here.

Sub-order—OSCINES

We pass now to the second of our two great groups of Passerine birds. This group, which is divisible into two sections, is made up

of what are known as the Oscinine Passeres, or Oscines, which are distinguished by having the voice-muscles inserted into the ends of the half-rings at the end of the windpipe. Strange to say, though all the birds included in the second section are apparently well equipped, and should prove fine songsters, only a few are really good performers. Crows, for example, are certainly deficient as singing birds ; yet they have the same voice-organ as the Nightingale. But then the same is true of the human race—the voice-muscles of the most tuneless among us do not differ essentially from those of the most divine singers !

The curiously aberrant type known as the LYRE-BIRD (Plate XXIV. fig. 5) represents the first of the two sections just referred to. According to most authorities this bird is placed apart from the true Oscinines, and made to form a sub-group, or section, because its voice-muscles, though resembling those of the " true Oscinines," are not the same in number—three instead of from five to seven pairs ; but for our purpose this may be ignored. The Lyre-bird is a native of Australia. More correctly we should speak of Lyre-birds, for three species are known. That which forms the subject of our illustration is found in New South Wales and South Queensland.

These birds are remarkable for the peculiar form of the tail, the two outer feathers of which are of great length, and so curved as to form a general resemblance in outline to the old-fashioned and now obsolete musical instrument known as the Lyre—hence the name of the bird. The inner tail-feathers have a quite peculiar structure, lending the whole a strangely soft and filmy appearance.

" These birds inhabit precipitous sandy gullies in thick forests with tangled undergrowth," says Mr. A. H. Evans, and continues : " Each cock has a walk, or playground, and scrapes little hillocks, or hollows, for dancing-places, where he struts or pirouettes with erect tail and drooping wings, scratching, pecking, and singing at intervals. The normal cry is a loud, liquid, gurgling sound ; but the ' Pheasants,' as the colonists call them, are clever mockers, imitating a cock's crow, a hen's cackle, a dog's bark or howl, the Laughing Jackass's note, or even the setting of a saw."

They lay but one egg, in a bulky nest of sticks, grass, and so on, lined with moss and feathers, and placed either in the fork of a tree

or on the ground. The nestling is remarkable for the fact that it is thickly covered in long and woolly down—a feature shared by no other Passerine birds.

THE TRUE OSCINES

All the birds now left for our consideration belong to the second section to which we have just referred, and are commonly described as the true Oscines, having from five to seven pairs of singing-muscles.

In describing these we shall take them in order, as nearly as possible, according to their grade of evolution, so far as this can be determined. That is, we shall begin with those species which are apparently lowliest, or least specialised, least modified, and proceed to those which are highest or, rather, most modified.

FAMILY HIRUNDINIDÆ (*Swallows*)

By this plan we commence with the Swallow tribe ; three species of which are common during the summer months in Great Britain.

Next to the Cuckoo, the SWALLOW (Plate **XXI.** fig. 4) is the bird whose appearance in the spring is most eagerly looked for. The Swallow lends a certain indefinable charm to the life of the country during the summer months, and it is certainly a most useful bird. Like its relative the House-martin, the Swallow builds a nest of mud, which is always placed on some rafter in outhouses, sheds, and similar places. And here two broods are reared before the summer is passed and they leave us again, at the approach of winter, for the more congenial climate of Africa. There was an old superstition to the effect that Swallows passed the winter in this country in a state of torpor, choosing horse-ponds and similar places in which to hybernate at the bottom of the water !

The HOUSE-MARTIN (Plate **XXI.** fig. 3) may easily be distinguished from the Swallow, having a large patch of white on the lower part of the back, and white under parts. Further, the legs and toes of the Martin are completely covered with short, downy feathers.

The mud nests of the Martin are familiar objects enough during the summer months, being fastened to the overhanging eaves of

houses. Unfortunately, however, after all their labour, the poor birds are frequently dispossessed by the impudent Sparrow, a bird which always has been, and still is, a pest.

The SAND-MARTIN (Plate XXI. fig. 5) is the smallest of our Swallows, wearing a modest livery, brown above and white below. Unlike the Swallow and Martin, it nests in holes in sandbanks, laboriously tunnelling long chambers which terminate in a spacious nursery. And all this is done with the feeblest of beaks and feet !

FAMILY MUSICAPIDÆ (Flycatchers)

The Flycatchers are the nearest relatives of the Swallows, and two species are regularly met with in Great Britain—the Pied and Spotted Flycatchers.

The SPOTTED FLYCATCHER (Plate XXV. fig. 9) is a quite common bird during the summer. Unobtrusive in appearance, he is yet a most interesting bird to watch, for it is his custom to obtain the insects which form his food by sudden sallies in the air from the spray which is chosen as a look-out. The capture made, he returns again, and in a moment is off on another chase, and so on, while daylight lasts.

FAMILY LANIIDÆ (Shrikes)

The Flycatchers are a feeble, harmless folk ; but some near relatives of theirs have developed much more formidable and forbidding natures. These are the Shrikes, or "Butcher-birds." Larger in size than the Flycatchers, they are to be distinguished by the almost hawk-like beak, which has been developed for a similar purpose—tearing up living prey, such as small birds, mice, and so on.

Two species of Shrike are to be met with in Great Britain.

The RED-BACKED SHRIKE (Plate XXV. fig. 1) and the GREAT GREY SHRIKE (Plate XXV. fig. 2). The first named breeds in these islands, the second does not.

These birds have a curious habit of impaling beetles and small birds and mice on the thorns of the hawthorn, apparently for future use. And it is on this account they have received the name "Butcher-birds," and the equivalent thereof, "Flesher."

Fig. 1. Red-backed Shrike *(Lanius collurio).*

Fig. 2. Great Grey Shrike *(Lanius excubitor).*

Fig. 3. Naked-throated Bell-bird *(Chasmorhynchus nudicollis).*

Fig. 4. Tree-pipit *(Anthus trivialis).*

Fig. 5. Dipper *(Cinclus aquaticus).*

Fig. 6. Golden Oriole *(Oriolus galbula).*

Fig. 7. Grey Wagtail *(Motacilla melanope).*

Fig. 8. White Wagtail *(Motacilla alba).*

Fig. 9. Spotted Fly-catcher *(Muscicapa grisola).*

FAMILY PARIDÆ (*Titmice*)

Whether the Titmice are related to the Shrikes or not is a moot point, and need not concern us here. They are all small birds, and of rather a pugnacious disposition.

Of the several species which are to be met with in Great Britain, the little BLUE TIT (Plate XXVI. fig. 9) is the most familiar, visiting even London gardens, where it may be easily induced to become a frequent visitor by a small piece of fat tied to a string. It is a courageous little bird, especially during the time that it is sitting on its eggs. Selecting a hole in some tree-trunk or wall, intruding fingers of would-be egg-stealers are often hastily withdrawn in consequence of an ominous hissing noise, mistaken, as it was intended to be, for the warning note of a snake! This bird may readily be bribed to take up a residence in any desired spot by means of nesting-boxes hung in convenient situations.

The GREAT TIT (Plate XXVI. fig. 10) is a larger bird than the Blue Tit, but similar in appearance. It may readily be distinguished, however, by the broad black stripe which runs down the middle of the breast. This bird attacks smaller birds, beating out their brains with its powerful beak.

The COAL-TIT and the CRESTED TIT (Plate XXVI. figs. 7, 8) require to be carefully sought, being of a shy and retiring disposition. While the Coal-tit may be met with in the less populated districts throughout Great Britain, the same is not true of the Crested Tit, which is rarely met with save in Scotland.

The Titmice are mainly insect-feeders, though ripe pears and apples prove an irresistible attraction for the Blue Tit, which is, therefore, much disliked by fruit-growers. In spite of these depredations, however, it is a most useful bird.

The LONG-TAILED TIT (Plate XXVI. fig. 6) is the smallest of the Titmice, and is really a very handsome little bird. In the art of nest-building it is one of the most skilful, the outside thereof being cunningly decorated with small pieces of lichen; and this covering harmonises so perfectly with the surroundings of the nest as to tax the skill of the most expert nest-hunter to find. Oval in shape, it is entered by a small hole near the top, while inside it is lined with feathers.

When sitting the long tail is disposed of by turning it over the back, so that beak and tail often poke out through the doorway at the same time! The capacity of this nursery is as wonderful as its structure, since no less than sixteen youngsters have been found cuddled together inside, though from seven to ten is the more usual number.

FAMILY SITTIDÆ (Nuthatches)

A near relative of the Titmice is the NUTHATCH (Plate XXII. fig. 9). This is a tolerably common bird in the south-east and centre of England, wherever old timber abounds; but in Scotland it is rare, and in Ireland unknown.

Like the Woodpeckers, it passes its whole life on tree-trunks, running up and down with marvellous ease. As a nesting-place it prefers some hole in tree-trunks, or branch, and at the bottom of the cavity a bed of dry leaves is made, on which the eggs are laid. When the entrance to the nursery is too large, the bird reduces it to the desired size—a hole through which it can only just wriggle—by means of mud. In autumn the Nuthatch feeds largely on hazel-nuts, which it fixes in some crevice, and then proceeds to hammer with its bill till the shell is broken; hard seeds of many kinds are also eaten, while, during a large part of the year, insects form a considerable portion of its diet.

FAMILY CERTHIIDÆ (Tree-creepers)

The little TREE-CREEPER (Plate XXII. fig. 7) is another tree-dweller. Like the Nuthatch, it climbs about over the trunks of large trees, but in one point it differs conspicuously, and this is in the form of its tail. In the Nuthatch this is short and soft; in the Tree-creeper, on the other hand, it is long, and composed of stiff-pointed feathers like those of the Woodpecker. Since the Nuthatch uses its beak as a hammer, after the fashion of a Woodpecker, and the Tree-creeper does not, this curious difference is not easy to understand, for the Woodpecker's tail is supposed to have developed as a support to give weight and force to the hammering of the beak, a device which, from what obtains in the Nuthatch, seems to be unnecessary. The

Fig. 1.
Skylark (*Alauda arvensis*).

Fig. 2.
Wood Lark
(*Alauda arborea*).

Fig. 3.
Crested Lark
(*Alauda cristata*).

Fig. 4. Haw-finch
(*Coccothraustes vulgaris*).

Fig. 5.
Cross-bill
(*Loxia curvirostra*).

Fig. 6.
Long-tailed
Tit
(*Acredula caudata*).

Fig. 7. Coal-tit
(*Parus ater*).

Fig. 11.
Lapland Bunting
(*Calcarius lapponicus*).

Fig. 8. Crested Tit
(*Parus cristatus*).

Fig. 10. Great Tit
(*Parus major*).

Fig. 9. Blue Tit (*Parus coeruleus*).

Tree-creeper's beak, indeed, could never be used hammer-fashion, for it is slender and curved, and is used for the capture of insects.

Though tolerably common throughout Great Britain, it is not often seen, and this owing to its small size, sober colours, and the skill with which it contrives always to keep the trunk of the tree between itself and inquisitive human visitors. The beautiful Wall-creeper (Plate XXII. fig. 6) has occurred in Britain only three times.

FAMILY TROGLODYTIDÆ (Wrens)

The Wren family includes a number of small birds spread over the greater part of the globe, and especially abundant in the Americas —North and South; but they are absent in the Australian and African regions. They all build domed nests. The COMMON WREN of Great Britain (Plate XXIV. fig. 6)—commonly known as "Jenny Wren"—serves as a good example of this family, which is generally distinguished by the sober colours of its members, the short, rounded wings and short tail, which is carried in a vertical position.

FAMILY AMPELIDÆ (Waxwings)

A very remarkable family is that which comprises the "Waxwings" of North America and North Europe and Asia. Numbering but few species, and of uncertain lineage, the birds of this family have acquired a certain notoriety on account of the fact that the inner wing-quills and tail-feathers are tipped with horny plates, having the appearance of small drops of red sealing-wax.

One species of this family, known as the WAXWING, or BOHEMIAN CHATTERER (Plate XXI. fig. 1), has visited Great Britain periodically for upwards of two centuries, sometimes in great numbers. It is an inhabitant of the Arctic regions, and extends across into North America. In temperate North America the place of this species is taken by the "Cedar-bird"—a smaller bird, and having neither the white nor the yellow markings in the wings that distinguish the British species. The British bird feeds on insects in the summer and berries in the winter.

FAMILY ORIOLIDÆ (Orioles)

As to the exact relationship of the beautiful GOLDEN ORIOLE (Plate XXV. fig. 6) but little that is profitable can here be set down. Suffice it to say, that it may as well be described here as anywhere else.

This bird is one of the most beautiful of birds, and, but for the greed of the senseless "collector," might possibly be induced to breed in Great Britain—it has already done so on more than one occasion. It is an annual visitor during the spring to Cornwall and the Scilly Islands, where as many as forty have been seen in a single April. Our southern and eastern counties are also visited. The female is a rather soberly coloured bird, being of a dull green colour above, while the under parts are streaked with grey.

The nest of the Golden Oriole is a very beautiful structure made of bark, wool, and grass-stems cunningly woven together and suspended beneath the fork of some small branch of a tree. It feeds chiefly on insects, but fruit is also eaten.

FAMILY STURNIDÆ (Starlings)

The COMMON STARLING (Plate XXX. fig. 4) belongs to a family which is peculiar to the Old World, and it will probably be found, on further research, to be a relative of the Golden Oriole. This bird is plentifully distributed over the British Islands, and when fully adult and in summer dress is an extremely beautiful species, the feathers having a wonderful metallic gloss. The new feathers, assumed after the autumn moult, are tipped with white, and it is by the loss of these tips that the summer livery is gained. The young birds are of an ash-brown colour, and totally unlike their parents.

Starlings lay their eggs in holes or the hollow trunks of trees, making but little pretence at nest-building.

FAMILY CINCLIDÆ (Dippers)

Among the more remarkable of our British Birds the DIPPER (Plate XXV. fig. 5) holds a conspicuous position. In shape looking

rather like an overgrown Wren, this bird enjoys the unique distinction among perching birds of being able not only to swim, but also to run along the bed of swift streams, whence much of its food is derived. It is an insect-feeder, though, through ignorance, it has been described as causing great havoc in trout streams, the eggs of trout being supposed to form no small part of its diet when these dainty morsels are to be had. So far, however, the case has not only not been proved against them, but it has no foundation in fact.

FAMILY TURDIDÆ (Thrushes)

We pass now to the Thrush family and its near relations.

The Thrushes contain some superb songsters, and among these the Common Thrush and the Blackbird enjoy pride of place.

The MISTLE-THRUSH (Plate XXIX. fig. 2), known also as the "Storm-cock," is the largest of our British Thrushes, and is to be met with all the year round. Measuring about 10½ inches in length, it may further be distinguished by the fact that the spots on the breast are kidney-shaped, while in the Common Thrush they have rather the shape of a peg-top. Even when on the wing this bird may readily be distinguished, since the outer tail-feathers have white tips.

Though not really more common, the BLACKBIRD (Plate XXIX. fig. 1) is probably a much better-known bird than the Mistle-thrush, for he is more in evidence, even deigning to take up a residence near and in large towns. In the London parks, for example, Blackbirds may be seen all the year round. Though the sable livery and golden bill give the Blackbird some claim to beauty, it is more as a songster that he is esteemed, the note of this bird being peculiarly flute-like and beautiful. The female is a quite sombrely clad individual, her plumage being of a dull brown. Fruit gardeners wage a relentless war on the Blackbird, which is only partly justified.

It is interesting to note that the nest of the Blackbird, like that of the Mistle-thrush, is lined with dry grasses, while that of the common thrush has a water-tight lining of rotten wood and cow-dung.

Nearly related to, and more striking in appearance than, the Blackbird, is the Ring-ousel (Plate XXIX. fig. 3), and this because of the pure white crescent which crosses the upper part of the breast. As a songster, however, it is far inferior to the Blackbird. The Ring-ousel is a fairly common bird on our moorlands during the spring and summer, but in autumn it forsakes us to spend the winter in more congenial climes.

By far the most beautiful of our British Thrushes is the rare Rock-thrush (Plate XXIX. fig. 4). This bird has, it is true, but slender claim to be regarded as a British bird, since it has only been met with in this country about two or three times. This is certainly curious, as it is a common bird in Germany and other parts of Europe at no great distance from our shores.

Among British birds there are few perhaps which the naturalist regards with such kindly feelings as the Wheatear (Plate XXIX. fig. 7), for it is one of the fore-runners of spring, one of the very first to come back to us after the dull and dreary days of winter.

The female is a much duller bird, having the upper parts brown, instead of the delicate pearl-grey of her mate. After the autumn moult, however, the male appears almost to assume the female dress, but this is because the feathers at this time have long brown fringes. As these wear off, the hue of the spring garment appears. The young birds resemble the female, but are slightly spotted above and below with buff.

The name "Wheatear" comes from an old Saxon word. "Wheat" is a corruption of White, and "ear" has come from the old Saxon word "aers," meaning rump, in allusion to the white patch above the tail.

Those who have the good fortune to live near heaths and commons, and especially near extensive pastures in England and Wales, have, if they wish it, plenty of opportunities of studying the habits of an extremely lively and very pretty member of the Thrush tribe. This is the Whinchat (Plate XXIX. fig. 8). It is an insect-eater, and builds a nest of grass and moss on the ground, or in the stems of some bush but a few inches from the ground.

A near relative of the Whinchat is the Redstart, of which two species occur in Great Britain. These are the Common Redstart

and the BLACK REDSTART (Plate XXIV. figs. 3, 2). Both are extremely handsome little birds, and both are tolerably common in Great Britain during the summer months, though locally distributed. In Ireland and Scotland these birds are increasing in numbers, and extending their range. They are insect-eaters, and leave our shores in autumn, though occasionally a few stragglers remain behind, only probably to die, before the advent of spring, from inability to procure a sufficiency of suitable food. Curiously enough the eggs of these two species differ conspicuously, those of the Black Redstart being of a pure, shining white, while those of its relative are of a beautiful pale blue. They build nests of fine grass and moss, hidden away in holes and buildings, under an inverted flower-pot, or in clefts of rocks.

A no less beautiful bird is the BLUE-THROAT (Plate XXIX. fig. 10). This bird was only a few years ago regarded as a great rarity in Great Britain. It is now known to occur, however, with some frequency, every autumn. In Scotland it is still rare, and so far it has not been met with in Ireland.

There are two forms of Blue-throat, perhaps three. The first has a red spot in the middle of the blue throat, the second, a white spot, and the third no spot at all. The red-spotted form is a bird of high northern latitudes, where its song enlivens the nightless Arctic summer, rivalling that of the Nightingale in richness. The white-spotted bird breeds south of the Baltic. The unspotted form may probably be but a variety of the white-spotted.

Of all the long roll of British Birds the REDBREAST (Plate XXIX. fig. 9) probably holds the chief place, and this on account of its confiding ways and plaintive song. More generally this bird is known as the "Robin," or "Robin Redbreast." Even in great cities it is no stranger, at any rate wherever there are parks or large gardens. Concerning so general a favourite we need say but little; but it would be well to point out here that the males and females cannot be distinguished, externally, from one another. What are so generally supposed to be females are really the young birds in their first plumage—a dull dress of brown, showing no trace of the beautiful orange-red throat, so conspicuous in the adults.

Though it is not true to say that no brightly coloured birds sing

well, it is a notorious fact that some of the most dowdily clad are among the sweetest of all songsters. And this is peculiarly true of the NIGHTINGALE (Plate XXIX. fig. 6), a bird which, by common consent, has been regarded as the Prince of singers. The wonderful music of this bird has formed the theme of some of the finest poetry, both ancient and modern, and this by eastern as well as western bards. Curiously enough, the western counties of England, Wales, and Ireland are rarely or never visited by this bird, nor is Scotland more favoured.

Even the most enthusiastic admirers of the Nightingale admit that the BLACK-CAP (Plate XXIV. fig. 10), in some respects, is almost as skilled a performer. Gilbert White described the Black-cap as a delicate songster, and declared that the notes of this bird always brought to his mind Shakespeare's lines :

> And tune his merry note
> Unto the wild bird's throat.

It is, moreover, more widely distributed than the Nightingale, Ireland and Scotland, as well as England and Wales, enjoying the privilege of sheltering this bird during the summer months. The female Black-cap has the crown of the head a dull chestnut, and so also have the young in their first plumage.

Another sweet singer, but far inferior to the Nightingale and the Blackcap, is the WHITE-THROAT (Plate XXIV. fig. 9). One of the commonest of our summer visitants, there must be few dwellers in the country who do not know and cherish an affection for this modest little bird. The male displays great courage where the safety of his home and young is concerned. Human intruders on his domain are followed along the hedgerow wherein his treasures lie snugly concealed with every demonstration of agitation and concern. He flits from branch to branch, with every feather of his throat and crest on end, and tail widely spread, while every now and then he shoots up into the air and descends again almost vertically. And this scolding, vigorous, remonstrance he keeps up till danger is past.

The Thrush family is a fairly large one. Not only does it include the true Thrushes, such as we have already described, but

it embraces all the other species which we have referred to since we left the Thrushes. The last of the family are now to be briefly mentioned. These are the small birds, more or less green, or brown, above, and yellow or buff below, which are known as the " Warblers."

Four fairly typical species are selected for mention here. There are the Golden-crested Wren, the Icterine and Marsh Warblers, and the Wood-wren.

The GOLDEN-CRESTED WREN (Plate XXIV. fig. 7) holds the unique distinction of being the smallest of our British birds, not exceeding $3\frac{1}{2}$ inches in length. It is further remarkable as an architect, for it builds a most wonderful nest of moss, felted together by spider-webs and sheep's wool. Outside little bits of lichen are fastened, so as to secure escape from the eyes of prowling enemies ; while within it is lined with feathers. Almost spherical in shape, this exquisite little nursery is actually swung at the end of long boughs, generally of a yew, or other evergreen, instead of being placed *on* the bough, as is the general rule with birds. Herein from five to eight, or even ten, tiny, buff-white eggs, faintly freckled with red, are laid, and these are most jealously brooded by the female. The female is duller than the male, and the young birds are duller than either, lacking the beautiful golden crest.

The WOOD-WREN (Plate XXIV. fig. 4) and MARSH-WARBLER (Plate XXIV. fig. 1) are annual summer visitors to our shores, and breed with us, just as do their relations the Sedge- and Reed-warblers and the Chiff-chaff. The ICTERINE WARBLER (Plate XXIV. fig. 8) is, however, only an occasional visitor, and on this list are to be placed a number of other Warblers for which we have no space here. The Reed-warbler, by the way, builds a most wonderful nest. This takes the form of a deep cup, fixed by its sides to the tall stems of reeds, which have thus the appearance of growing up through the sides of the nest. So skilfully is this nursery built, that when the reeds bend low over the water, the eggs or young, as the case may be, rest snugly at the bottom of the nest.

Though many of the Warblers, such as the Sedge-, Reed-, and Marsh-warblers, show a preference for swamps and inland sheets of water, a great number of species, on the other hand, show no such preference, and occur in the driest of localities. Between the Reed-

and Marsh-warblers, by the way, there is so great a resemblance that only an expert can distinguish them.

It is a moot point as to whether the homely little HEDGE-SPARROW (Plate XXIX. fig. 5) should be reckoned as nearly related to the Thrush family or not. Here, at any rate, will be the best place to mention it; and in doing so we would particularly emphasise the fact that it is in no way related to the House-sparrow, as the suffix "Sparrow" seems to imply. In their habits, even more than in their appearance, no two birds could be more unlike, for the House-sparrow is a veritable gamin, insolent and mischievous, while the Hedge-sparrow is to be reckoned among the most modest and retiring of birds. Generally distributed throughout the British Islands, a resident throughout the year, there can be few bird-lovers who are not familiar with this species. It is an insect-eater, and is frequently made the dupe of the Cuckoo, performing the work of foster-parent with great zeal. The nest of this bird, seldom placed far from the ground, is made of roots and moss, and lined with hair and wool. Herein from four to six beautifully turquoise-blue eggs are laid.

FAMILY MOTACILLIDÆ (*Wagtails and Pipits*)

That the Wagtails and Pipits are closely related there can be no question, though, in so far as their general coloration is concerned, the two groups differ rather conspicuously; for while the Wagtails have a beautifully harmonious, but rather brightly coloured livery, the Pipits, as a rule, wear but a dress of sober brown, relieved by streaks of darker brown. But in both groups the legs are relatively long, while the inner quill-feathers of the wing, or inner secondaries, are of considerable length, so much so as to reach to the end of the primaries when the wing is closed. These feathers are sometimes, but quite wrongly, described as "tertials."

Among British Wagtails, perhaps the two most conspicuously beautiful species are the GREY WAGTAIL (Plate XXV. fig. 7) and the WHITE WAGTAIL (Plate XXV. fig. 8). The Grey Wagtail is a singularly handsome bird, as may be seen in our illustration, and is remarkable for the great length of the tail, and this among a tribe conspicuous for long tails. The black throat is

worn by the male only during the breeding-season, though the female sometimes develops a few black feathers in this region. White replaces the black in the winter dress. It is a lover of mountain streams rather than of those which run through flat country, and is an insect-feeder. A perfect male may attain a length of $7\frac{1}{2}$ inches in length.

The White Wagtail in its summer dress may readily be distinguished from its far more common relative the Pied Wagtail by the greater amount of white on the side of the neck, and in that the upper parts are of a beautiful pearl-grey instead of black. The White Wagtail is not so common as the Pied, which in winter dress it resembles rather closely. The Yellow Wagtail, by the way, is an extremely common bird in parts of England and Ireland, and is by no means uncommon in Scotland and Wales. It is a species which revels in wet meadows, and finds the company of cattle exceedingly attractive, chiefly for the sake of the flies which congregate about them.

Of the Pipits, we may remark that while seven species are reckoned as British birds, only three are commonly to be met with. In some respects the Pipits recall the Larks, but they are, nevertheless, not very closely related thereto.

The Pipit which is chosen for illustration here is the TREE-PIPIT (Plate XXV. fig. 4). Though fairly distributed throughout the British Islands during the summer months, this bird is yet not one that attracts much attention, though with bird-lovers it is always in good favour, and this on account of its neat appearance and pleasing, though limited, little song. The Meadow-pipit, or Tit-lark, is the Pipit which is most commonly met with in Great Britain. Smallest of the Pipits, it may further be distinguished by the longer and more curved hind-toe.

FAMILY ALAUDIDÆ (The Larks)

There is a very general notion among those who do not pretend to expert knowledge in the matter of the classification of birds, that the Larks are related to the Pipits and Wagtails. Whether this belief is well founded remains to be discovered At the same time

they seem to show some relationship towards the Finches to be discussed presently.

The Larks are chiefly natives of the Old World, though North America is not without representatives of the group, these being found in the "Horned Larks." This family is distinguished, among other things, by the fact that the back of the scale-covered portion of the leg is covered by small scutes, and in this the Larks differ from all other true Passeres.

Of the several species of Larks which occur in Great Britain, the SKYLARK (Plate XXVI. fig. 1) is by far the best known. After the Nightingale, no bird has so stirred the finer feelings of the poets. There are few birds which sing while on the wing, and of such performers the Skylark is easily first. One of the most pitiful sights possible is, perhaps, that of a caged Skylark trying to sing; but the callousness of their gaolers is even more pitiful.

During migration these birds suffer appalling losses to their ranks. On the island of Heligoland, which is on the line of their route to this country during the annual autumn influx, as many as 15,000 have been caught in a single night; while immense numbers break their necks by dashing themselves, bewildered, against the beacons of the lighthouse, or stunned, fall into the sea and are drowned.

The WOODLARK (Plate XXVI. fig. 2) is but a locally distributed species throughout Great Britain. Resembling the Skylark in appearance, it may always be distinguished therefrom by its smaller size, shorter tail, more pronounced crest, and the broad, pale stripe over the eye. The song is sweet and flute-like, and uttered on the wing, the bird hovering in the air and descending spirally with half-closed wings. It does not mount like the Skylark, however, nor is its song so powerful.

The CRESTED LARK (Plate XXVI. fig. 3) though tolerably common just across the Channel, is rare in England. Rather more bulky than the Skylark, it may further be distinguished by the long, drooping crest, which depends from the back of the head, and the absence of white from the tail.

FAMILY FRINGILLIDÆ (The Finches)

The Finch family includes an enormous number of species, many

Fig. 1.
Yellow-ammer
(Emberiza citrinella).

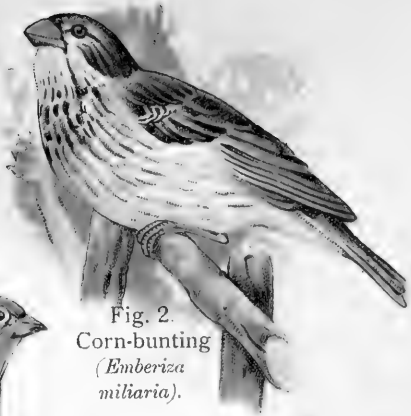

Fig. 2.
Corn-bunting
(Emberiza miliaria).

Fig. 3. Ortolan
(Emberiza hortulana).

Fig. 5. Snow-bunting
(Plectrophanes nivalis).

Fig. 4.
Reed-bunting
(Emberiza schoeniclus).

Fig. 6.
Greenfinch
(Coccothraustes chloris).

Fig. 8. Bullfinch
(Pyrrhula pyrrhula).

Fig. 7.
Pine-grosbeak
(Pyrrhula enucleator).

Fig. 9. Tree-sparrow *(Passer montanus).*

Fig. 10. House-sparrow *(Passer domesticus).*

remarkable for the beauty of their plumage. They may be generally described as birds having a short, pointed, conical beak, and nine primary quill-feathers. All are seed-eaters, save during the breeding-season, when they destroy great quantities of insects, these being captured to feed their young.

We shall describe here, in the first place, some of the more interesting of those which are to be met with in Great Britain.

The GREENFINCH (Plate XXVII. fig. 6) is one of the commonest of our Finches, and, it is to be noted, differs from most of the Finches in that there is but little difference between the plumage of the male and female. In confinement this bird does well, and shows a capacity for learning the songs of other birds, though it is by no means a brilliant performer.

The HAWFINCH (Plate XXVI. fig. 4) is but a locally distributed species, and even where common, contrives to escape observation in a remarkable way. It is a handsome bird, though the colours of its plumage are by no means striking. One of its most conspicuous characters is the great size of its beak, which is furthermore remarkable in that when this is opened there will be found a curious arrangement of crushing-pads for opening the hard-shelled stones of the hawthorn and other fruits, of which it is very fond.

Quite the most beautiful of the British Finches is the GOLDFINCH (Plate XXVIII. fig. 4). As with the Greenfinch, the male and females are hardly to be distinguished. The young, however, wear a different livery, inasmuch as they lack, among other things, the beautiful markings on the head, and hence are known as "Grey-pates" and "Bald-pates." The Goldfinch is, unhappily, a favourite cage-bird. On this account it has for years suffered a merciless persecution at the hands of bird-catchers and fanciers, and as the Goldfinch is by no means easy to keep in confinement, an enormous mortality is the result. So great have been the raids on their ranks, that in many parts of the country they have been practically exterminated.

The SISKIN (Plate XXVIII. fig. 8), or Aberdevine, is a winter visitor to England, and here it occasionally remains to nest. In Scotland and in parts of Ireland it is far more common, and breeds freely. The female is rather duller than the male, and the young birds are duller than the female.

The SERIN (Plate XXVIII. fig. 9), though reckoned among our British birds, is but a casual visitor to our shores, only eight examples having been recorded. It is a very beautiful bird, and on this account, probably, has been introduced into the United States. The home of the Serin may be considered as the southern part of Europe and Asia Minor.

But this Finch should have for us a quite peculiar interest, inasmuch as the Serin, which is found in the Canaries, Madeira, and the Azores, is the ancestor of that most popular of cage-birds, the CANARY (Plate XXVIII. fig. 11). According to some authorities this bird, which is known as the Wild Canary, is only a sub-species of the Serin which occasionally occurs in Great Britain; while, according to others, it is a quite distinct species, though, of course very closely related.

Of the HOUSE-SPARROW (Plate XXVII. fig. 10) little, surely, need be said here, for wherever a house-roof is to be found, there will the Sparrow be found also. It would be well indeed if he were not so common, since, possessing an inordinate greed for corn, he robs the farmer unmercifully; while, being of a most pugnacious disposition, he displaces more handsome and more useful species. In England he is driving away the Swallows and Martins and many other useful birds, and in the United States, where he was introduced under the mistaken impression that he would remove a plague of caterpillars, he has proved no less of a nuisance.

The TREE-SPARROW (Plate XXVII. fig. 9) is a relatively rare bird compared with the House-sparrow, and is locally distributed, being more abundant in Cambridgeshire and the eastern counties of England than elsewhere in these islands. In Scotland it is more abundant along the eastern side; in Ireland it was unknown until 1852, but near Dublin it seems to be increasing.

Closely resembling the House-sparrow, it may be distinguished therefrom by having the crown of the head chestnut instead of grey, and two white bars across the closed wing. Further, while in the House-sparrow the sexes are quite dissimilar, in the Tree-sparrow they are hardly to be distinguished.

The CHAFFINCH (Plate XXVIII. fig. 3) is one of the commonest of our Finches, especially in the north of England. Few birds are

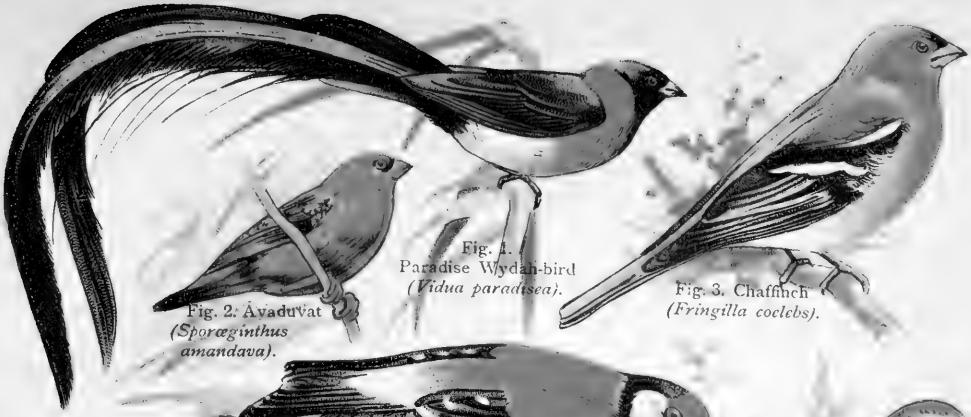

Fig. 1. Paradise Wydah-bird *(Vidua paradisea).*

Fig. 2. Avadavat *(Sporæginthus amandava).*

Fig. 3. Chaffinch *(Fringilla coelebs).*

Fig. 4. Goldfinch *(Carduelis elegans).*

Fig. 5. Java Sparrow *(Munia oryzivora).*

Fig. 6. Linnet *(Linota cannabina).*

Fig. 7. Cardinal *(Cardinalis virginianus).*

Fig. 8. Siskin *(Carduelis spinus).*

Fig. 9. Serin *(Serinus hortulanus).*

Fig. 10. Brambling *(Fringilla montifringilla).*

Fig. 11. Canary *(Fringilla canaria).*

more esteemed as cage-birds, especially by the poorer classes, by whom they are treated as a rule with great brutality, inasmuch as they are generally confined in cages so small that they can barely turn round therein. That such things should be is a blot on what we are pleased to call our "civilisation"! Not only in England, but on the Continent, it was a common custom to sear the eyes of these birds with a hot iron in order to make them sing better! To-day, in public-houses of the lowest class, singing competitions, wherein renowned performers are matched one against another, are quite common, and to attain this perfection the wretched birds are made to pass most of their time in the dark.

The BRAMBLING, or "MOUNTAIN FINCH" (Plate XXVIII. fig. 10), is a near relative of the Chaffinch, and occurs in some numbers in Great Britain during the winter months, being remarkably abundant in some years—whenever, in short, hard winters prevail on the Continent. The wonderful black head and neck are assumed just prior to the breeding-season, and this, not by a change of feathers, but by the wearing away of the brown tips of the feathers assumed at the autumn moult.

The LINNET (Plate XXVIII. fig. 6), like the Chaffinch, is a common British bird, and also in great demand as a cage-bird. The horrors of captivity bear no less heavily on the Linnet than on the Chaffinch. It is a curious fact, but the wonderful rose-red breast which distinguishes the cock Linnet is never regained by captive birds after their first moult, yellow replacing the red.

The BULLFINCH, or "BLOOD OLPH" (Plate XXVII. fig. 8), is a bird which is generally distributed throughout England and the more wooded districts of Ireland, but in Scotland it is less frequently met with, though by no means a rare bird. The sexes differ conspicuously in colour, the females lacking completely the wonderful red and pearl-grey colours which distinguish the males. The young birds resemble the female, but lack the black cap.

The Bullfinch, like the Chaffinch, builds a remarkable nest, though the workmanship of the two differs in a very striking way. The first named makes a wonderful nursery of fine moss, wool, and lichen cunningly felted together; while the Bullfinch makes a platform of fine twigs of birch, beech, fir, etc., surmounted by fine roots and

a little hair fashioned into a shallow cup, in which the eggs are laid.

The PINE-GROSBEAK (Plate XXVII. fig. 7) and the CROSSBILL (Plate XXVI. fig. 5) are two closely allied birds of peculiar interest. The first named is a very rare visitor to Great Britain, and must be sought in the far north—in the region near the Arctic circle wherever fir-trees abound. Here it contrives to flourish, feeding on buds, birch catkins, seeds, and berries, varied by such insects as come within its reach.

The CROSSBILL, on the other hand, is a resident species in Great Britain, though extremely local in its distribution. During the autumn and spring it may be met with in small flocks, in pine-woods in the southern and eastern countries of England; but it is more abundant in the north, especially in Scotland, where it breeds annually. In Ireland it is also a breeding species.

Among birds the Crossbill holds a unique place, and this because the upper and lower jaws cross one another at their tips—hence the name "Crossbill." By this peculiarity they are enabled to wrench apart the pine cones, and abstract therefrom the seeds which form the bulk of their food. Before the beautiful red plumage, which distinguishes the male, is assumed, a livery of orange-yellow is worn.

The Finch tribe are greatly sought after as cage-birds, and this because, being seed-eaters, they are more easily fed. But besides our native birds, a number of exotic species are also kept. Of these the most familiar are perhaps the PARADISE WYDAH-BIRD (Plate XXVIII. fig. 1), the AVADUVAT (Plate XXVIII. fig. 2), the JAVA SPARROW (Plate XXVIII. fig. 5), and the CARDINAL (Plate XXVIII. fig. 7). The two first named are "Weaver-birds," which, according to some authorities, should be reckoned as forming a distinct family—the Ploceidæ—though these admit that this family is "hardly" to be distinguished from the Fringillidæ.

The PARADISE WYDAH-BIRD is a South African species, found on swampy ground where reeds and long grasses flourish. Kaffir children take them in numbers with limed twigs, and they also commonly capture them by running them down, the poor birds being hampered by their long tails. During the season of courtship these birds perform most wonderful evolutions in the air.

Fig. 1. Blackbird *(Turdus merula)*.

Fig. 2.
Mistle Thrush
(Turdus viscivorus).

Fig. 3. Ring Ouzel *(Turdus torquatus)*.

Fig. 4. Rock-thrush *Monticola saxatilis)*.

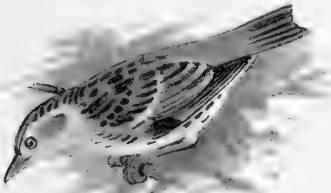

Fig. 5.
Hedge-sparrow
Accentor modularis).

Fig. 6.
Nightingale
(Daulias luscinia).

Fig. 7. Wheatear *(Saxicola oenanthe)*.

Fig. 9. Red-breast *(Erithacus rubecula)*.

Fig. 8. Whinchat *(Pratincola rubetra)*.

Fig. 10. White-spotted Blue-throat
(Cyanecula suecia).

The Java Sparrow, as its name implies, is a native of Java, where, like our Common Sparrow, it is a pest, committing great ravages on the rice-fields. It has, unfortunately, been introduced into Africa and parts of India. During latter years it has become much sought after as a cage-bird, and breeds readily in confinement. From these domesticated birds a white race has been raised, which is highly prized.

Though popularly called a "Sparrow," it must be remembered that this bird is not really very closely related to the true Sparrows—such as the House- and Tree-sparrows.

A scarcely less popular cage-bird is the AVADUVAT (Plate XXVIII. fig. 2), known also as the Amaduvade Waxbill and the Tiger-finch. This bird is a native of India, Cochin China, Siam, Java, and other Malayan Islands, whence it is imported into European markets in enormous numbers.

The male in its breeding-dress is very beautiful, and possesses the further charm of a brief but sweet song, which is said to resemble a bugle-call. The female is less brilliant than her mate, being brown above—though having a light patch of red on the rump—and buff-coloured below.

This bird moults twice in the year, and the male, after the breeding-season, assumes the dress of the female.

The males of this species are pugnacious little birds, and fight with spirit, on which account they are kept by the natives in India to afford them sport, much as cock-fighting was practised in England.

As touching the Cardinal, we may remark that this is an American species, known also as the "Virginian Nightingale." This species ranges from North America southwards into Mexico and British Honduras, and is one of the Finches. Inhabiting thickets and undergrowth, this bird contrives, in spite of its brilliant coloration, to shun observation, even when, from its rich rolling notes, its near presence is assured.

FAMILY TANAGRIDÆ (The Tanagers)

This family contains a large number of species of surpassing beauty, many of them indeed being among the most gorgeously coloured of

all birds. They are a New World group, closely allied to the true Finches. Indeed it is difficult to find characters whereby the Family Tanagridæ can be separated from the Family Fringillidæ.

The little CALLISTE (Plate XXI. fig. 7) is shown here as a good example of the vividness which the Tanagers commonly display in their plumage, though some species are quite soberly clad. The species here figured is a well-known cage-bird.

FAMILY EMBERIZIDÆ (The Buntings)

The Buntings are obviously nearly related to the Finches, but they may be distinguished therefrom, among other things, by the small knob which is found in the centre of the inner surface of the upper jaw, the strongly marked angle of the lower jaw, and the fact that there is a gap between the cutting edges of the beak when the mouth is closed.

Many of the Buntings are brightly coloured. Some species, on the other hand, have a quite sombre livery. Such, for example, is the case with the CORN BUNTING (Plate XXVII. fig. 2), known also as the Common Bunting. It is a relatively large bird, measuring 7 inches in length, and is furthermore noteworthy in that it bears a really striking resemblance to a Skylark, from which, however, it may easily be distinguished by its beak and the absence of a conspicuously long claw to the hind-toe. This bird, though common in some parts of England, is comparatively rare in others.

The YELLOW AMMER (Plate XXVII. fig. 1), or Yellow Bunting, is a far more common species than the last named. It is also known as the " Writing-lark," and this because of the curious " scribblings " as of a pen which cover its eggs ; though this character, it should be mentioned, is also shared by the eggs of the Buntings in general.

Perhaps the most celebrated of all the Buntings is the ORTOLAN (Plate XXVII. fig. 3), and this because of the fame which it has unfortunately acquired as a table delicacy. Common throughout the greater part of Europe, this bird, as soon as the breeding-season is over, returns southwards, collecting along the shores of the Mediterranean in vast flocks. On both of its migratory journeys, to and from Europe, it is beset by bird-catchers, who make enormous hauls, fattening their victims for the table. Its natural food consists of

insects and seeds in about equal amounts. As a songster it is a poor performer, wherein it resembles its relative the Yellow Bunting. As a British bird the Ortolan is but seldom met with.

Wherever sluggish streams and osier- and reed-beds abound, there, throughout Great Britain, the REED-BUNTING (Plate XXVII. fig. 4) may be looked for. It is a rather handsome species when seen in spring ; but in autumn, just after its new feathers have been assumed, the black hood is obscured by reason of the long brown tips which the feathers of this region bear when first developed. As the winter proceeds, these tips gradually wear off and reveal the black portion.

Though presenting a general superficial appearance to the Reed-bunting, the LAPLAND BUNTING (Plate XXVI. fig. 11) may yet be readily distinguished, and this more especially by the long claw of the hind-toe, which has gained for this bird the name of " Long-spur."

Until some fifteen years ago the Lapland Bunting was accounted a rare bird in Great Britain, and it was quite unknown in these islands in 1826. Between the date of its discovery (1907) and 1892 only forty examples had been recorded, and these all in England. But in 1892 the eastern counties of England were invaded by large numbers, and yet larger hosts followed in 1893, Flamborough and Lincolnshire being especially favoured. Only a very few have ever been taken in Scotland, while in Ireland only a single female has been recorded.

The home of this bird is in the far north ; it is indeed a circumpolar species, frequenting swampy moorlands beyond the limit of forest growth.

The curious process of colour change which we described in the Reed-bunting is still more strikingly marked in the case of the SNOW-BUNTING (Plate XXVII. fig. 5). Black and white, in strong contrast, forms the livery of the male of this bird when seen in spring ; but these hues are overlaid by chestnut-brown, when, in the autumn, the annual " new clothes " are donned. The female resembles the male, but is duller in plumage.

The Snow-bunting is a winter visitor to Great Britain. A few pairs remain to breed in the north of Scotland, but the majority retreat to the Arctic regions to fulfil their parental duties.

FAMILY CORVIDÆ (The Crows)

With the Crows we come to the highest of all the Passerine birds. This position they hold by virtue of the fact that in both sexes, and in all stages of development, the plumage is practically the same, though after the first moult of the young birds extra brilliancy is gained. The Crows are also remarkably intelligent birds, and though not one of them can, by any pretence, be called a songster, yet the voice-muscles are extremely well developed.

The largest and most famous of all the Crows is the RAVEN (Plate XXX. fig. 5), a bird which is growing increasingly rare in Great Britain, though in the wilder parts of these islands it may continue to hold its own for a long while yet. As a pet the Raven has few rivals.

The ROOK (Plate XXX. fig. 7) is peculiar among the Crows in the matter of its curious bare face. Young Rooks, like all the other Crows, have the face feathered and the nostrils protected by curiously stiff feathers, whose tips are pointed forwards along the beak. After the first moult these, together with the rest of the feathers of the face, are shed, and henceforth an area of bare white skin, having the appearance of being covered with powder, becomes the distinguishing badge of this bird. Why these feathers should thus be shed is a mystery, though many have attempted to solve it. The Rook is too familiar a bird to need further description.

The JAY, the JACKDAW, and the MAGPIE (Plate XXX. figs. 3, 1, 2) are all, in spite of ruthless persecution at the hands of game-keepers and game-preservers, fairly common birds. One cannot but regret that this war of extermination should be so persistently waged, for the harm these birds do is grossly exaggerated.

The NUTCRACKER (Plate XXX. fig. 6) is only an accidental visitor to Great Britain, having occurred in these islands about thirty times. The seeds of fir-cones appear to be its favourite food ; but hazel-nuts are also eagerly sought for, and these are said to be stowed away in bulk in a sort of pouch under the tongue.

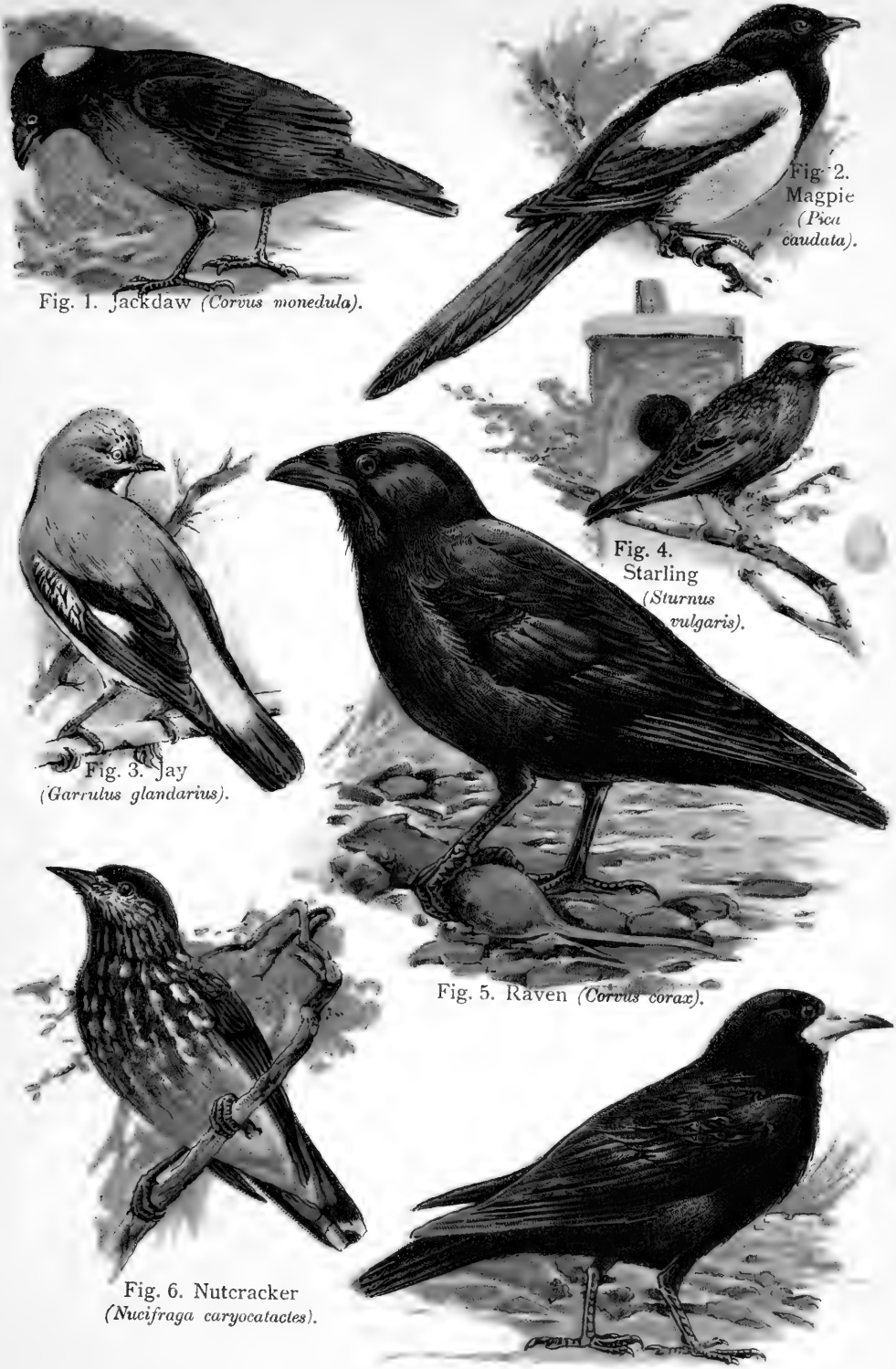

Fig. 1. Jackdaw *(Corvus monedula).*

Fig. 2. Magpie *(Pica caudata).*

Fig. 3. Jay *(Garrulus glandarius).*

Fig. 4. Starling *(Sturnus vulgaris).*

Fig. 5. Raven *(Corvus corax).*

Fig. 6. Nutcracker *(Nucifraga caryocatactes).*

Fig. 7. Rook *(Corvus frugilegus).*

GENERAL INDEX

The Latin names of species are in italics, and those of genera, families, orders, etc., in capitals. If the same name is referred to more than once, the most important page is placed first.

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