OUR BIRD FRIENDS

A BOOK FOR ALL BOYS AND GIRLS

BY R·KEARTON, F·Z·S
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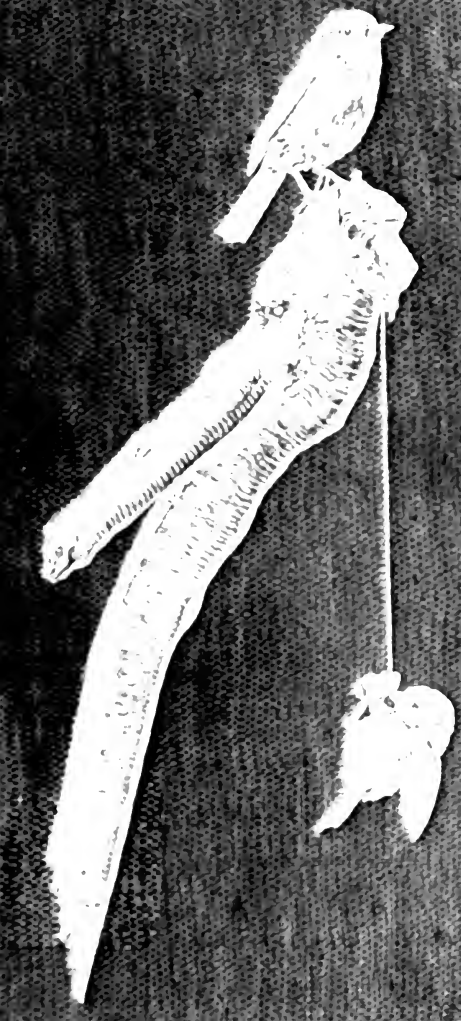

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"IT'S MY TURN NOW, BROTHER BILLY" (PAGE 9.)

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A BOOK FOR ALL BOYS AND GIRLS

BY

RICHARD KEARTON, F.Z.S.

Author of "With Nature and a Camera," "Wild England of To-day," etc.

WITH ONE HUNDRED ORIGINAL ILLUSTRATIONS FROM PHOTOGRAPHS BY

CHERRY KEARTON

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1900

TO

THE LITTLE NATURALIST

WHO

TRIED TO CATCH

A

WILY OLD SPARROW

WITH

A PINCH OF SALT

PREFACE.

I HAVE always been a lover of birds. Their sweet songs and interesting habits were the chief charm of my boyhood's days, and still continue to give me unalloyed pleasure.

When quite a tiny toddler, I used to sit on my grandfather's knee, and listen open-mouthed to the old man's wonderful stories about our feathered friends, and clap my hands with glee whenever he imitated the cries of Owls and Peewits for me. As a special treat he used to make up cunning little rhymes about birds exchanging their nests, in order to show me what a world of confusion would be likely to arise out of species of different habits trying to manage each other's affairs. He was a lover of all living things, and I never heard of his trying to shoot a bird but once, and that single attempt, curiously enough, ended only in a great smashing of crockery. It came about in this way. An impudent and troublesome Carrion Crow alighted in a row of trees in front of his house, and he took my father's single-barrelled gun from its moorings alongside a beam in the old farm kitchen. The piece and my grandfather being strangers to each other, so to speak, it went off bang before he had time to leave the house, and broke every plate in the oak

crockery rack save such as were of pewter and stood shining in the bottom row.

There was no house along the whole countryside more beloved by the Martins than my grandfather's, and scarcely a foot of eave with a southern aspect was without its tiny dwelling of baked mud. The old man delighted to be awakened at the first peep of day by the happy little birds twittering joyously in their nests, but not so his woman servant Jane, who railed loudly against "the dirty things," whenever a heavy thunder shower brought a nest to the ground, and spread the moistened clay over the clean stone flags whereon she used to sweeten her milk pails in the wind and sun.

It was not long before I knew where to find the nest of every species breeding in our neighbourhood, and to distinguish the cry of any feathered friend almost as soon as it was uttered. Then a terrible calamity befell me. I was climbing a wall one day, a thing I often did from sheer lightness of heart and overflowing spirits, when I fell and broke my hip. This accident confined me to the house for many weary months, but no sooner had I got out on a pair of crutches than I was collecting all the nice clean feathers round our fowlhouse and dropping them over the side of an old stone bridge that crossed our moorland stream just where it plunged through a rocky defile, in order that the Swallows, skimming like shadows over the surface of the chattering beck below, might catch and carry them away to line their

nests with. And rare good fun it was. I greatly enjoyed the sport; and I am quite sure the birds were delighted. They hardly ever missed a feather, and they seemed to like little curly ones off white Ducks the best of all.

In the pages of this little book I have endeavoured to arouse and encourage such an interest in my young readers as my dear old grandfather kindled in me. They will enjoy a great advantage over me in being able, through the achievements of my brother's camera, to examine accurate pictures of the birds living, loving, and labouring amidst their natural surroundings.

The work in no way pretends to be anything in the nature of a scientific treatise, but rather a chatty, though, so far as care and pains can make it, accurate little volume dealing with just such phases of bird life as are likely to attract attention and, I hope, set my readers observing and inquiring for themselves.

For valuable assistance most ungrudgingly given in the preparation of the book we have to express our grateful thanks to Cameron of Lochiel: the Rev. M. C. H. Bird, of Stalham: Mr. Walpole Greenwell, of Marden Park: Mr. J. Whitaker, of Mansfield; Mr. H. A. Paynter, of Alnwick; Messrs. Charles and Frank Rutley, of Birchwood; Mr. G. Armstrong, of Tillingdown: Mr. James Woollen, of Horley; Mr. John Harker, of Nutfield: Mr. James Alderson, of Potts Valley, and many other friends and bird-lovers throughout the country.

A great store of interesting knowledge may be gained without collecting a single bird's egg, nest, or skin, and I hope that every reader of this book will do all in his or her power to promote kindness to birds and prevent them from being robbed of their little treasures in the spring-time.

I am very sorry to say that many country boys are guilty of thoughtlessly smashing birds' eggs, and some even of the unspeakable cruelty of killing little baby chicks, and barring up with stones mother birds brooding in holes in trees and banks, and leaving them to starve to death. Such conduct is a disgrace to any British boy, whether he be the son of prince or peasant, and one would like to ask those who do such things what they would think of a giant who treated them in a similar manner. Not long ago a gentleman in Suffolk came upon a boy beating a small brown object in the middle of a turnpike lane with a stick, and exclaiming after each blow, "I'll larn you for being a toad!" He taught that lad a lesson by applying his stick vigorously to his back, and exclaiming at each stroke, "I'll larn you for being a boy!"

Let us not forget that the weakest living thing on the face of the earth has its rights, and that it is both wicked and cowardly of us to abuse our superiority of mind or body over inoffensive members of the brute creation.

R. K.

CATERHAM VALLEY, SURREY.
October, 1900.

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OUR BIRD FRIENDS.

CHAPTER I.

AT BREAKFAST, DINNER, TEA, AND SUPPER.

What the World would be like without Birds—Their Uses in keeping down Insects—How Nature Provides for Birds—A Bird's Restaurant in Winter—Cheeky Charlie and No-Tail Johnny—The Blue Tit and the Kestrel Hawk—Selfishness of Robin Redbreasts—The Industrious Starling—Town Birds' Ignorance of Rural Things—Wise and Foolish Rooks—How Privation Spoils Birds' Morals—How Sea-Gulls Feed—Birds that Live upon Flies—Why Birds Put their Heads on One Side—Birds that Catch Fish—Birds that Prey on other Birds—Differences between Individual Birds of the same Species—What Owls Like—Skuas: the Robbers of the Air—Curious Accidents to Birds in Catching their Prey.

THE feeding habits of birds are extremely varied and interesting, and I propose to say something in this chapter about the usefulness of those habits to man as well as to the birds themselves.

What would the world be like without the fowls of the air? A desolate and very possibly uninhabitable wilderness; for we should have hardly a leaf upon our trees, a flower in our fields, or a railway train running at certain seasons of the year; and every time we clapped our hands we should feel a distinct

layer of winged insects between them. I have seen huge oak trees in England denuded of their leaves by small caterpillars that were hanging by their fine silken threads from every bough, branch, and twig. In America, some years ago, a mighty host of caterpillars bade defiance for days together to a railway train by crossing the line upon which it was advancing in such prodigious numbers that their crushed bodies made the metals too greasy for the engine wheels to grip them, and after the contents of the sand-boxes had given out they simply slipped round and round without making any progress.

In most countries the stock topic of conversation amongst acquaintances is the weather, but in South America, instead of remarking, "It's a fine morning!" they salute each other with some reference to insect life, such as, "How are you with regard to mosquitoes?" Humboldt, the great traveller, records the fact that his boatmen got so used to slapping each other's bare backs, in order to drive away the mosquitoes, that the poor fellows used to keep on slapping even whilst they were asleep. I have myself seen gnats rise in such clouds from tree tops on a sultry summer's evening that they looked like pillars of smoke, and I once witnessed a number of hay harvesters absolutely driven from a field by midgets. Not long ago, I was compelled to abandon a small row-boat, which I was dragging through some deep heather growing on a piece of land dividing

two Highland lochs, because of the torturing agony caused by the attacks of myriads of the same kind of hungry insects. At each footfall they rose in savage clouds, assailing every exposed part of my head and hands, even finding their way into my nostrils and ears, and making me sneeze and shiver in abject misery. It may come as news to some people that workmen, while building houses in the British Isles, have been known to wear veils to protect them from midgets.

Visitors to Venice in the spring-time notice how numerous the mosquitoes become after the Swallows have left, in the month of May, for their breeding haunts in the north of Europe, and precisely the same thing occurs at the places the birds leave behind them on their return journey south.

Some years ago, a gentleman calculated that the value of the agricultural produce of the United States in a single year was no less than three thousand eight hundred million dollars, or, in round numbers, seven hundred and sixty million pounds in English money, and that one-tenth, or nearly ten million pounds' worth, was destroyed every year by insects.

Not long since the Government paid for thirty-five million caterpillars, which weighed no less than thirty-six tons, and were destroying the trees and plantations in Hong Kong Island before the natives were set to work catching them.

The people of France once made the experiment of doing without birds, but suffered so disastrously

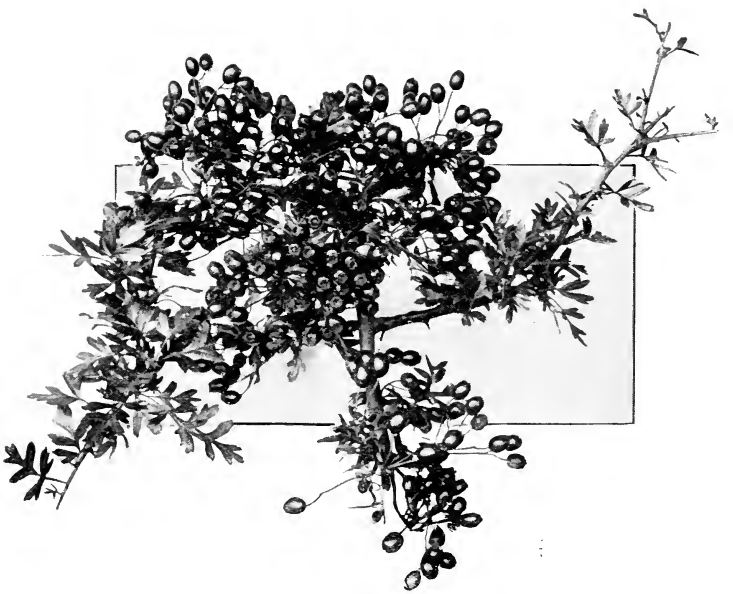
in consequence that the wise men of the country, after taking a lot of evidence on the subject, gave their verdict that "birds can live without man, but that man cannot live without birds."

Only last year, the agriculturists in a certain part of Scotland shot hundreds of Rooks on their nests and destroyed thousands of eggs, but this year they have asked that the birds may be left alone on account of the increase of an injurious grub that Rooks are specially useful in destroying.

Of course, there is no denying that certain species of birds do harm in fields and gardens, especially when they become too numerous, but whilst taking this side of the account into consideration, we must not, in common fairness, overlook the other, namely, the enormous amount of good they do us by devouring immense numbers of injurious insects and vast quantities of the seeds of troublesome weeds, without ever once asking for anything in the nature of a reward, except such a measure of peace as will allow them to enjoy their wild free lives in safety.

It is wonderful how Nature provides for her children. The ripening fruits of autumn come along in such order as to help the birds. First we get bilberries, then rowan- and elder-berries, followed by a great feast of blackberries, to say nothing of several other sorts of wild fruits. When these have all been devoured, millions of hips and haws bedeck our hedgerows with their bright warm colours. Wild fruits differ just as much in their qualities of mellow-

ness and flavour as cultivated kinds, and birds are good judges of what is nice and what is not; indeed, one might almost charge them with daintiness upon occasion. For instance, I know two fine hawthorn



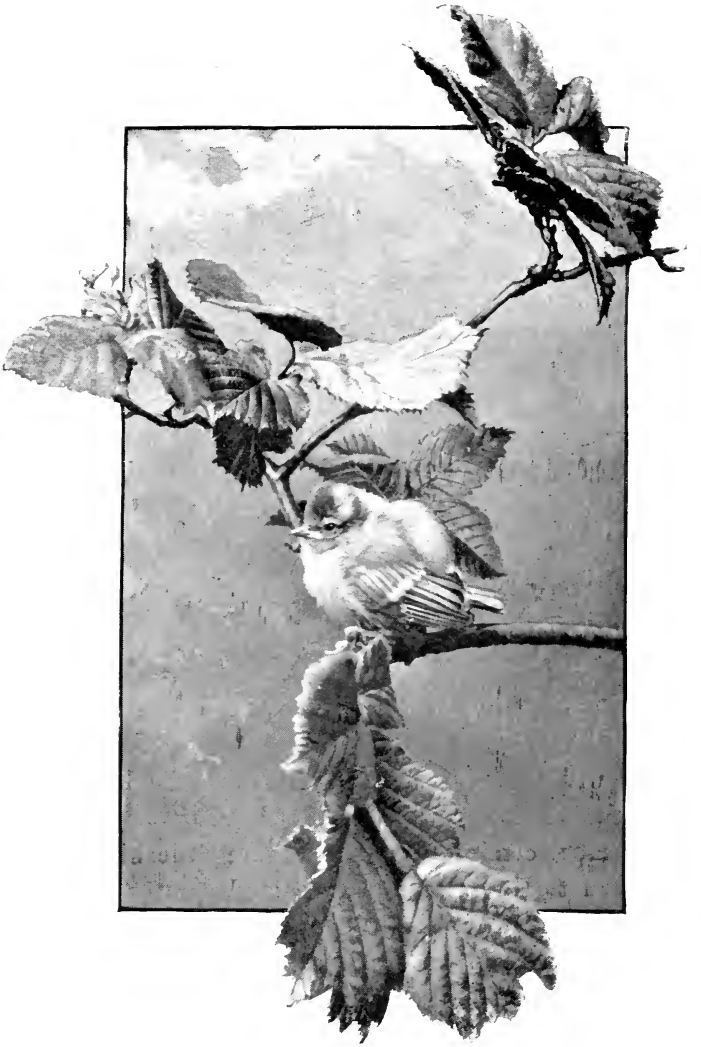
A FEAST FOR BIRDS: HAWTHORN BERRIES.

trees growing side by side in Surrey, and during the last two autumns they have both been laden with fruit. Blackbirds and Thrushes pay great attention to one of them, and it is soon bare, whilst the other is left severely alone, and in the spring of last year it had a lot of old fruit still hanging even when the new leaves were on.

After the hips and haws have been consumed during the late autumn and winter, the mistletoe and ivy seeds ripen between February and April, and afford a plentiful supply of food in many parts of the country before the advent of snails, worms, and all kinds of creeping and winged insects.

During long, hard winters, when the ground and all its insect life are lying fast asleep beneath a thick blanket of snow, the birds have a very hard time indeed of it, and boys and girls a grand opportunity of being of real service to the hungry little creatures and at the same time enjoying a lot of first-rate fun.

My little daughters and I turn our garden into a birds' restaurant every winter. We save all our sunflower heads in the autumn, and directly the snowflakes commence to fly we take one or two out and tie them to upright sticks fastened to the palings or stuck in the ground, and the Greenfinches are not long in paying us a visit. One will alight on the top of a head and quietly extract seed after seed, cleverly shelling each and dropping the husk to the ground, all the while keeping a sharp look-out for the approach of any marauding cat. If a companion attempts to share the feast, the bird already in possession will at once stretch out his wings and, opening his great conical bill very wide, threaten to swallow the intruder head, tail, legs, feet and all. I know of no bird that can look quite so fierce as an angry Greenfinch. Great Tits are very bold, dashing



YOUNG BLUE TIT WAITING TO BE FED.

birds, and in spite of all the threats and savage bluff a Greenfinch can summon they will, whenever it suits their fancy, rush in and, seizing a seed, carry it off from beneath the self-appointed owner's very nose. Occasionally a com-

IVY BERRIES

panion will turn up, and, alighting on the branch below the sunflower, will cock his head on one side in the most comical way, as if asking the bird in possession to throw him down a seed.

For the Tit family generally we suspend a cocoanut with a piece sawn off either end; but I am afraid that the members of the Great or Oxeye species do not give the others much in the way of a chance. It is highly amusing to watch them feeding, one at either

end, especially when nearly all the kernel has gone. They remind one of two boys trying to get through a barrel from opposite ends during an obstacle race. Having thus to work in the dark, after a vigorous peck or two they jerk their heads out to see if anyone is coming. Often one of the birds will get scared by seeing a head bob in at the opposite end of the nut every time he attempts to take a bite, and, jumping on the top, will begin to chatter and plainly request his brother Billy to look sharp and allow him a chance at his end, as depicted in the frontispiece to this work.

GREENFINCHES EATING SUNFLOWER SEEDS (*p.* 8).

We were able to recognise one or two members of this species every time they came along. One we christened Cheeky Charlie with the Clean Yellow Waistcoat, because he was much brighter than his fellows, could drive any of them off, and snap his bill

at an old cock Sparrow or laugh at an angry Greenfinch with equal ease. He was a fine strong fellow. Another we named No-Tail Johnny, because he had lost all his tail feathers by some accident. He generally turned up to tea about four o'clock every afternoon.

As the poor Blue Tits had to shiver round and content themselves with an occasional grain of maize snatched from the fowl run, and cleverly hammered to bits on a neighbouring telegraph wire, we had to organise an overflow table for them. We passed a piece of black cotton thread through the kernel of a Barcelona nut, and then suspended it from a stump. The little chaps seized the dangling bit of food with both feet, and then hammered away at it whilst hanging absolutely upside down, as shown in the accompanying picture.

BLUE TIT FEEDING ON SUSPENDED KERNEL OF NUT.

Great Tits tried time after time to imitate their lighter brethren, but never once succeeded in maintaining their hold upon the kernel. But one, wiser than the rest, did a much cleverer thing one day. He stood on the stump, and, seizing the thread, hauled it in reef by reef with his bill and feet until he got the kernel to the top, when he held it down and chipped his well-deserved reward off it.

One day, whilst watching a Blue Tit feeding in my garden, I saw a Kestrel Hawk come hovering over, and directly the wee bird caught sight of him it dashed straight at the window through which I was looking, struck the glass, and fell stunned to the ground. I ran out, secured it, and brought it indoors, where I kept it until consciousness returned, when it occurred to me to make a little experiment on it just to see how far the fright had affected its appetite and nerves. I painted the crown of its head vermilion, so that I might recognise it again, and then released it. To my surprise, the plucky little thing was back again inside of an hour pecking away as merrily as ever.

For the Thrushes, Blackbirds, Sparrows, and Robins we have a large table made of a hummock of snow, when there is any on the ground, with a hollow in the centre. In this we place soaked dog biscuits, greatly to the delight of all our feathered customers. The Robins, of course, dash in in their own perky way, and commence to help themselves without any kind of ceremony. Not so the sly, suspicious old Sparrows. They sit on garden fence

and chimney-pot, and talk wisely to each other about cats, traps, nets, and guns, until by-and-by along comes an old mother Thrush, hopping sedately for a few yards, and then stopping to listen for several seconds, with her head cocked on one side in the most

SONG THRUSH ON HUMMOCK OF SNOW.

comical way. The Sparrows descend upon seeing their bigger and simpler-minded neighbour approach the food, and, following close behind, wait until she has detached a piece and turned away to enjoy it in some quiet corner, when the artful thieves rush in, seize it, and dash away in a noisy, laughing mob, leaving the rightful owner of the tit-bit in a state of blank surprise.

Robin Redbreasts are, of course, very pretty, confiding little birds, but it is a great pity they are so

selfish during the winter months. Instead of two of them feeding together like brothers from a piece of food large enough to make a meal for fifty members of their family, they will stand on either side of it glaring and scolding at each other like a pair of rival

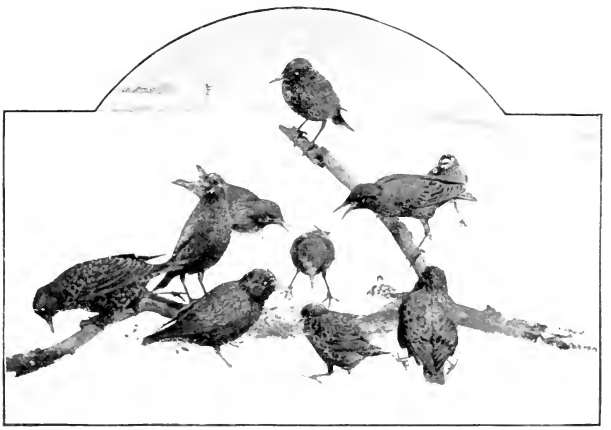
A ROBIN WAITING FOR HIS BREAKFAST.

bus conductors, whilst a quiet little Hedge Sparrow, in his coat of sober brown, eats away as if he were in a bun-consuming competition at a country fair.

Starlings love suet and all kinds of raw meat, and so do the Tits; but it is better to give the latter cocoanut, as suet greases, dulls, and dirties their beautiful feathers. I am very fond of Starlings because they are such busy, bustling birds, and teach us all a great lesson in industry. When they go forth

in search of food they do not dawdle and hang about like tradesmen's errand boys, but rush round as if the welfare of the whole universe depended upon their individual exertions.

In order to secure the picture of the old cock



STARLINGS FEEDING IN WINTER.

Sparrow on page 16, we put some suitable food down at the foot of the sweet pea sticks on which he is standing, and, fixing up the camera in front, attached a pneumatic tube to the shutter and retired indoors to wait and watch. By-and-by along came our "sitter," the air-ball at the end of the pneumatic tube was squeezed, the shutter released, and the Sparrow's portrait secured. A day or two afterwards one of my little daughters, then only a child of six years of age, saw the picture and thought that she

would like to try her hand at natural history. She secured a supply of crumbs which she placed on the top of the stick in front of the bird's head, and a pinch of salt which she deposited on the end of the stick near his tail, and then retired indoors to watch and wait, judging that when the Sparrow turned up to breakfast and began to peck the crumbs, in all probability his tail would come in contact with the salt and she would have him!

Town-bred birds, like town-bred boys and girls, have a very different notion of things from their brothers and sisters in the country. For instance, some bird lovers in the country, and especially on the Continent, give their feathered friends a treat at Christmas by fixing up an unthreshed sheaf of corn in a convenient situation for the hungry creatures, who are, of course, greatly delighted. An old friend of mine, living in the northern suburbs of London, thought he would give the birds a treat last Christmas, and, after a considerable amount of trouble, secured a sheaf of corn with the grain still attached and fixed it up in his garden. The birds had never seen such a thing before, and it scared them to such an extent that they would not come near the garden even.

I have made some experiments on country birds by dyeing corn blue and then offering it to them. They simply would not touch it.

Rooks are very wise on some points and very unwise in regard to others. For instance, I have

COCK SPARROW READY FOR DINNER (*p.* 11).

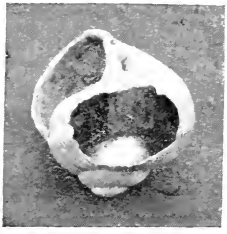
watched them pull the thatch of a corn stack out straw by straw because they knew there was some golden grain beneath and they would come upon it if they only worked long enough. On the other hand, those living round London are so foolish that they mistake the red indiarubber rings out of lemonade and other aërated water bottles for food, and, whilst wandering over fields upon which town refuse has been spread, collect thousands of these indiarubber round O's and carry them off to their nests.

They are fond of edible snails, and the illustration on the opposite page shows a perfect specimen: another which has had its shell broken, but succeeded in escaping and repairing the damage, in all probability through its assailant being driven off by some intruder: and the third an empty shell from which the bird has extracted the succulent morsel.

AN EDIBLE SNAIL.

Long terms of privation spoil some birds' morals. The hard winter of 1895 drove Rooks to the sad extremity of killing and devouring Starlings, and I am sorry to say that I have since watched them trying to repeat such murderous tactics when the excuse of starvation could not be urged with so much force. The exceptionally severe weather of the winter I have just mentioned did Londoners and Seagulls a great service. It made them shake hands with each other, so to speak, and they have been on the very best of terms ever since. The birds, consisting mostly of black-headed Gulls, in winter dress, were driven by hunger up the River Thames in search of food, and directly they arrived at Blackfriars Bridge they met with such an outburst of hospitality as fairly astonished them. Thousands of people turned out on the Embankment and the bridge to see and feed them with sprats, bits of bread, and other acceptable morsels daily. I was

SNAIL, WITH BROKEN SHELL REPAIRED.



SHELL AFTER SNAIL HAS BEEN EATEN.

down feeding them one day, when a lady stopped and asked me what they were. "Black-headed Gulls, madam," I answered.

"How absurd!" she exclaimed. "Why, their heads are white!"

"Quite right," I replied; "but they were christened in summer when they are black, or, to be more precise, a very dark brown."

In the early spring the birds all took their departure on breeding duties intent, but directly food began to grow scarce in the North Sea the following autumn, they said to each other, "Let us away and see our friends in London." This has now become a fixed habit with them, and besides earning a good living for themselves they have helped at least one poor man to gain his daily bread. He buys a sackful of sprats every morning, and, standing on the Embankment, doles out the fish all day long. For the amusement of the crowd of spectators, he lets the birds take their food off his head, or out of his hand, or throws it to them to catch it in mid-air like Swallows. Just fancy the dexterity of a bird that can catch and hold a slippery little sprat sent twirling through the air like a glint of sunshine!

Well, the same hard winter made Scottish Sea Gulls try turnips as food, and they liked the vegetable so much that they have continued the habit. They have also started eating corn standing in the fields, and if they keep on invading farm produce in this

way we shall soon have to change their name from Sea to Land Gulls.

A very strange thing about the feeding habits of Lesser Black-backed Gulls is that although the birds will seize and swallow a live young Eider Duck on land whenever they get the chance, a dead adult Eider may lie for days together quite untouched on a small island inhabited by thousands of hungry Lesser Black Backs.

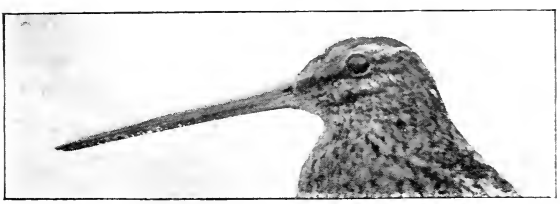
The question at once occurs, "But perhaps they do not like the flesh of tough old Eiders?" That is not the explanation, however, for directly the body of the dead bird is thrown into the sea there is a fierce scramble for a taste of it, and I have never met anyone who could explain why it was not touched whilst lying on land.

Birds are structurally adapted in a marvellous degree for their various methods of feeding. Take their bills, for instance. The long, nerve-crowded one of the Snipe has been specially developed in order that it might be thrust deep into the soft mud of the swamp and telegraph to the brain of its owner the presence of some wriggling worm, the slightest movement of which it is capable of at once detecting; and the short, curved one of the Falcon, so that it may swiftly and easily rend its prey. The short, conical equipment of the Finches facilitates the husking and crushing of grain, and the spear-like one of Herons the transfixing of slippery fishes; the broad, flat bills of ducks the sifting of mud, and the narrow

chisel-like ones of the Oyster-catcher the prising of limpets off their native rocks.

Swifts, Swallows, and Martins obtain their livelihood by dashing through the air at lightning speed and seizing all the flies they can secure in their path. On still summer evenings I have often heard the snap of their bills as they suddenly closed upon some unfortunate victim. They occasionally mistake a trout angler's artificial fly for the real thing, and, seizing it, get hooked. Moorish ladies used to amuse themselves by angling for Swifts with artificial flies from the windows of their harems, and one can only hope that they have now discovered some more humane pastime.

Other birds catch flies, but in a totally different way. The Pied and Spotted Flycatchers sit upon some branch, post, or other coign of vantage, and wait for winged insects to come their way, when they



SNIPE'S BILL (*p.* 19).

take a short fluttering excursion into the air and secure their prey, whilst appearing to be trying to alight upon something that is not in existence.

Birds have a very acute sense of hearing, which, no doubt, helps many of them in detecting the exact whereabouts of their prey. Woodpeckers, when running up a tree, often stop suddenly to listen, and, in all probability, thus discover larvæ at work driving tunnels in the wood, for my brother and I have conducted several experiments which all tend to prove the reasonableness of this. He has climbed thirty or forty feet up a lofty tree on a calm day, as shown on the next page, and, clapping his ear close to the trunk, has been able to tell me exactly how many times I scratched it with a penknife close to the ground. Wood transmits sound almost like a telephone wire, as can be easily proved by anyone putting his ear close to one end of the trunk of a felled tree of any size and getting a friend to scratch the other with a pin.

PEREGRINE FALCON'S BEAK
(*p.* 19).

Thrushes hop about quietly in grass fields, stopping often to listen with their heads on one side. I have frequently seen one, after remaining in that attentive attitude for several seconds, suddenly rush forward and, seizing a big worm by the head, engage in a most vigorous tug-of-war, hanging back and pulling until it was obliged to prop itself up with its

tail. When the weather is too dry to tempt worms to the surface of the ground the birds go in search

AN EXPERIMENT IN THE TRANSMISSION OF SOUND (*p.* 21).

of garden, banded, and other snails, of which they are very fond. Upon discovering one of these mail-

clad creatures they hasten off with it to some stone, upon which the unfortunate victim is hammered until the walls of his house give way, when he is promptly dragged forth and swallowed.

The illustration on the next page shows a number of snails which birds, such as Rooks, Blackbirds, and Thrushes, love to eat. The three large kinds are hammered on stones until their shells are broken, but the smallest one is sometimes swallowed whole. One day I was watching a Tree Pipit on her nest from the interior of a stuffed bullock standing only a yard away, and was surprised to see her suddenly jump up and seize and swallow a snail that was leisurely journeying up a grass stem eight or ten inches away, entirely unconscious of danger. A friend of mine once counted no less than one hundred and eighty empty snail shells lying round a single flint, and, being prompted by curiosity to weigh them, found that they scaled over a pound.

Both Crows and Gulls take shellfish from the sea shore, and, rising to a considerable height in the air, drop their victims upon rocks or some other hard substance in order to break the shells, when they promptly descend to enjoy the feast. At Oban, in Scotland, the latter birds may frequently be seen doing this; but the ingenious individual that takes the mollusc aloft does not always reap the reward of his industry, for some sly old companion will quietly watch his movements and rush in and seize the savoury morsel directly it has struck the ground, and

fly off with it before its rightful owner has had time to come near.

It is wonderful to what an extent wild creatures help each other to gain a livelihood. In some American rivers large fish chase small ones, upon which they prey until they make some of them leap on to the low muddy banks in their frightened efforts to escape. This is a true case of "out of the frying-pan into the fire," for before they have time to wriggle back into their own element the unfortunate little creatures are devoured by birds lying in wait for them. I suspect that a very similar fate often awaits worms escaping from moles. Any little vibration in the ground sends a number of worms to the surface in a great state of fear, and from the way I have tracked Blackbirds and Thrushes hopping after a mole throwing up his little hillocks of mould

SOME SNAILS THAT BRITISH BIRDS EAT.

through a thin layer of snow, I doubt not there was a shrewd notion of benefits to be derived.

Birds also help quadrupeds to obtain their food upon occasion. The illustration on page 27 shows a number of wild cherry stones which were brought from a neighbouring wood by birds, and dropped from the branches of a big tree growing near the middle of an open pasture. They were collected by some mouse and carried to the hole shown in the picture, in order to be stored and gnawed open for their kernels as required for consumption.

Gannets, Terns, and Kingfishers, although all of them unable to dive in the proper sense of the word like Cormorants and Grebes, yet get their living by plunging headlong into the water after fish swimming not far from the surface. The Gannet breeds in vast numbers on the giant rock stacks round the island of St. Kilda, also on Ailsa Craig and the Bass Rock, and a very good authority has computed that the birds catch more herrings round the coast of Scotland than all the fishermen of that country put together.

The natives of the Orkney Islands used to try to reduce the stock of Gannets fishing in their neighbourhood by painting counterfeit herrings on blocks of wood, which they moored in such positions as to allow them to float a little way below the surface of the ocean. When a bird came sailing along he fancied he espied a nice fat herring below, and straightway plunging upon it, struck the block of

wood with his bill and broke his unlucky neck in the process.

Terns always face the wind if there is any blowing when they make a plunge into the sea after surface-swimming fry, and it is a very pretty sight to see the males feeding the females whilst brooding with the glittering little fishes they have caught.

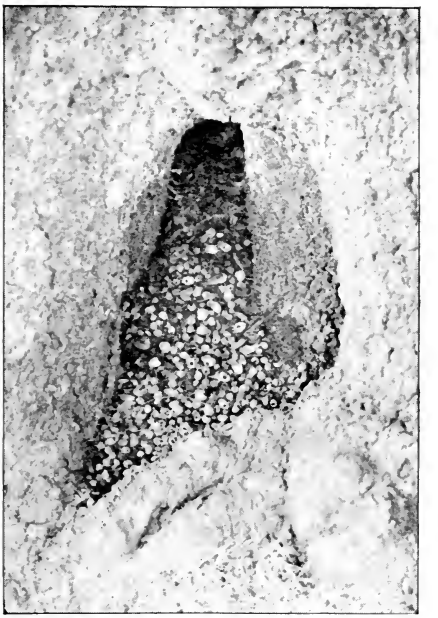
It is really astonishing to what an extent birds prey upon each other. Even the mild and simple-minded domestic Duck has recently been proved guilty of seizing and swallowing young Moorhens after drowning the dusky little wretches.

Peregrine Falcons, Merlins, and Sparrowhawks are all fierce, relentless marauders, that live almost entirely by devouring their defenceless feathered neighbours. Some idea may be gathered of their prowess when it is mentioned that they can fly off with victims twice their own weight.

The Golden Eagle slays lambs, hares, rabbits, Grouse, and Ptarmigan, and during the breeding season provides a liberal table. A poor man in Ireland once tided over a famine with the aid of a pair of Golden Eagles. He gained access to their eyrie, and, clipping the wings of their young ones, forced the parent birds to keep on bringing food, of which he took a share for himself and family.

Many people think that all wild birds of the same species are exactly alike in disposition. Nothing could be further from the fact. Two members of almost any species will differ as much in character as any two

human beings in any country in the world. For instance, some members of a species are bolder than others, some kinder, more industrious, more skilful, and so on. I have seen a perfectly wild Kestrel Hawk sit on a telegraph wire and watch an express train rattle by at top speed without the least concern. I have also known a Robin alight on a lady's head, and I saw the male Chaffinch figured in the illustration on page 29, after feeding from the dish of Pheasant food in the hand of a Highland gamekeeper's daughter, alight on her father's shoulder and knee without the least sign of fear. Jock, as they christened the bold bird, tried to induce his wife to come along and join him, but she lacked his strong nerves, and always remained at a respectful distance.



WILD CHERRY STONES DROPPED BY BIRDS AND COLLECTED BY A MOUSE (*p.* 25).

Owls are very useful in keeping down the supply of mice and voles, and not many years ago did the farmers in the south of Scotland a real service by ridding them of a plague of the latter. They also kill small birds, and occasionally trout. An ingenious naturalist has suggested that they attract the latter to the surface by their luminous eyes, knowing that fish swim up in great wonderment to a light. The owl has no need, however, to do this, for in summer-time trout visit shallow pools in the evening in search of the larvæ of flies, and when so engaged I have on many occasions seen them with their backs out of water, thus affording any hungry owl an excellent opportunity of seizing and carrying them off.

The Common and the Arctic Skua are veritable robbers of the air. Watching until some luckless Gull catches a fish, they instantly give chase and harry the poor bird until it is obliged to relinquish its prey, when they at once plunge headlong through the air after it, and are so swift of wing that they can invariably secure it before it reaches the surface of the ocean below.

Some birds have peculiar ways of dealing with their prey. The Red-backed Shrike, for instance, keeps a regular larder. It has the strange habit of impaling its victims on thorns, and has in this way earned for itself the popular name of Butcher Bird. It lives upon beetles and other winged insects principally, but does not hesitate to attack lizards, mice, and small birds, and has been known

GAMEKEEPER'S DAUGHTER FEEDING WILD CHAFFINCH (*p.* 27).

to kill Great Tits and Robins, and even to carry off a newly-hatched Pheasant. The sizes of these victims testify to the bird's courage and prowess, for it is little bigger than a House Sparrow. It has a strong hooked beak, and some naturalists are of opinion that it impales its prey in order to pull it to pieces with greater ease; but I am inclined to think that from the number of small victims such as beetles I have met with, and the few large ones such as mice and birds, that its real object is to have a well-stocked larder.

Birds of prey often come to grief whilst in pursuit of their victims. A Sparrowhawk chased a small bird through a railway carriage window some years ago, and, becoming entangled in the meshes of the hat rack, was secured by a passenger sitting in the compartment.

The White-Tailed or Sea Eagle feeds upon fish amongst other things, and sometimes, when warm weather attracts such species as skate and halibut to bask on the surface of the sea, he pounces upon them and, burying his talons deeply in their backs, is dragged under and drowned.

Cormorants and Kingfishers occasionally attempt to swallow captures too large for their throat capacity, and are choked in consequence.

Herons take up their stand on the edge of some lake or stream, and when an eligible trout or eel happens to pass near enough, the thing that looked in all probability to them a mere old grey stump

standing out of the water, darts out a long neck with a lance-like bill on the end of it, and they are transfixed before they can say "fly." Not long ago a Heron speared an eel right through the eyes and was unable to extricate its bill. The victim writhed in such a way as to coil round its captor's neck and strangle him.

FOOD WHICH BIRDS LOVE: BLACKBERRIES IN EARLY AUTUMN.

CHAPTER II.

SOME REMARKABLE NESTS AND EGGS.

The Author's Delight at Finding his First Bird's-nest—Some Birds better Nest-builders than others of the same Species—Instances of Birds Departing from Nesting Rules—Wise and Foolish, Idle and Industrious Birds—Feathered Thieves—Birds that Take in Lodgers—Non-Gregarious Birds that Dwell Together—Ancestral Homes of Birds—Nests in Curious Situations—Strange Materials used for Nests—Accidents to Nest-builders—Birds that Never Build Nests for Themselves—Prudent Birds that Build Spare Nests—Ground-building Birds—The Cock Sparrow and the Fighting Roosters.

THERE are few natural objects that children view with half the delight a wild bird's nest and eggs can give. How sweetly I remember the first one I ever found! It belonged to a Song Thrush, and rested on an old moss-clad ash stump which leant over a pool of clear water in such a way that I could see myself plainly mirrored below whilst climbing to find out what the wonderful little treasure house contained, and had serious misgivings as to the ducking I should suffer in the event of the stump breaking with me. Upon reaching a point high enough to command a view of the interior of the nest, I rubbed my youthful eyes with delight. Was ever such a sight seen

before? Four beautiful blue eggs, spotted with black, just as if some careless schoolboy had made his pen sputter ink over them. I can, in fancy, still hear the old mother Throstle scolding me in loud, angry notes from the branches of an elm tree close by for daring to intrude upon her domestic arrangements.

Since that day I have wandered over the greater portion of the British Isles in search of birds' nests, not in the hope of robbing and spoiling, but that my brother's camera might figure them and their contents exactly where they were placed by their owners. During the course of my rambles I have seen specimens of nearly every bird's nest that is built in this country, and I propose in this and the next chapter to relate some of the most interesting things about them and the eggs they contained.

Birds' nests are truly wonderful things, and do very great credit in many instances to their builders; but it is absurd for poets to say that a man with "twenty years' apprenticeship," and all the tools which science has placed within his reach, could make nothing of a similar kind which would not be put to shame by our feathered friends. Man is and will ever remain by far the cleverest and most wonderful creature on the face of the earth, and it is much better to teach or learn the truth than to delude ourselves or others by exaggerations against which reason rebels.

Many people think that all wild birds belonging to the same species build nests exactly alike in regard to style of architecture, size, materials employed, workmanship displayed, and situation chosen; in fact, that they are all ruled by an unerring force called instinct, and that they could not depart from its cast-iron laws even if they tried. Nothing could be further from the fact. Although it is quite true that the little homes of birds belonging to the same species bear a strong family resemblance by which they may be readily recognised, there can be no denying that the skill, industry, opportunities, and even experience and wisdom of the builder play their part almost as much as they do amongst the builders of human dwellings. For instance, everybody easily recognises a nest built by a Song Thrush, because it is deep, basin-shaped, made of twigs and grass stems, lined with mud or some other substance that will dry hard and smooth, and is placed in some evergreen bush or hedgerow; but a close observer will notice that one Thrush's nest is bigger and bulkier than another, better built, the materials varied according to the builders' opportunities of getting them handily, and the situation for it selected with far greater or far less wisdom. Last spring I made careful measurements of two Thrushs' nests which I found within a very little distance of each other. The first was situated on a flat, outspreading fir-bough, and was two inches deep and four wide across the top; the second nest was

in a blackthorn bush, and measured three inches deep and three and a half across the top.

Nearly all wild creatures differ from each other in individual qualities, like human beings, and, what is more, behave differently according to circumstances; and in order that my readers may see the force of this, I will give a few striking instances of birds departing from established nesting rules.

The Common Wren builds a nest which is domed over and has a sort of bull's-eye entrance in front, but specimens have been found quite open at the top, because they had been built under a sheltering ledge of rock, and the birds evidently judged them to be without need of a domed covering in consequence. This may, I think, be taken as a clear instance of departure from architectural style.

The Spotted Flycatcher makes her nest, as a rule, of straws, fibrous roots, moss, hair, feathers, rabbits' down, and cobwebs; but not long ago a specimen was discovered near Hyde Park Corner, London, made of old wax vestas and cigarette-papers, simply because smokers who had rested on surrounding seats had rendered these materials far more plentiful than those used by the species in the ordinary way, and which were practically unprocurable except by long flights into the country and back again—a truly wonderful instance of a bird adapting itself to circumstances.

The Great Tit or Oxeye selects a hole in a tree,

wall, or bank, in which to hide and have its nest well covered and protected; but not long ago I was shown one built in the old nest of some other bird situated in a thin, straggling hedgerow, and the little lodger's eggs and newly-hatched chicks were quite open to the sky.

Thus we have instances of complete departure from rule in respect of architecture, materials, and situation. I shall have more to say about this presently, but let me here turn aside to point out that some birds are very wise and others very foolish. I have known a Song Thrush have its first nest blown down by a gale of wind, and immediately set to work and build a new one, the foundation materials of which were so twisted round the branches upon which it rested that it was impossible for the wind again to dislodge it. On the other hand, a bird of this species will try again and again to make its nest on some ledge of rock to which she has taken a fancy, despite the fact that every time the structure assumes certain proportions it topples over and rolls away to destruction.

Some feathered folk are extremely idle, whilst others are just as industrious. A few years ago a small farm boy in the North of England took it into his head that he would build a pair of Jackdaws a nest in a hole in the wall of an old barn. He did so, and a pair of birds came along, adopted it, and reared a happy family of young ones in it. But, of course, there is another side to

this question. A pair of these birds, whilst out hunting for apartments in which to start housekeeping, went into an old church steeple. They

GREAT CRESTED GREBE'S AND COOT'S NESTS (*p.* 43).

liked the elevation and peace of the place, but it had its drawbacks, as nearly all other dwelling-places have. From the stairway on which they would have to lay their foundation sticks to the hole through which they would be obliged to bring them was a distance of ten feet. This did not deter the

brave-hearted, energetic pair, for they set to work with a will, and inside of three weeks built a pillar of sticks ten feet in height, and when these were finally removed they filled the body of an ordinary cart. What a lesson in industry!

When they breed early in the season, birds take a much longer time to build their nests and work far more leisurely than they can afford to do later on whilst preparing to rear a second brood. I have known a Robin Redbreast take a full fortnight to build a nest during the early days of a cold, backward Spring, and, later on, when the sunshine was warm, food plentiful, and everything aglow with life and energy, finish building, have her eggs all laid, and be sitting in far less time.

Some of the migratory birds, such as the Wryneck, set to work searching for a suitable breeding place almost directly upon their arrival on our shores from the sunny South.

I am sorry to say that feathered thieves are by no means unknown. The Green Woodpecker takes great pains to chisel a hole ten to eighteen inches deep in some decaying tree for the reception of her eggs, but hardly ever has a chance of using the same abode twice over, because, long ere she dreams of family affairs the following Spring, a pair of Starlings have found and promptly taken possession of the old home. Starlings are awful rogues in this respect. Only last Spring my brother and I watched a pair of Green Woodpeckers chisel out

their third nesting-hole in an old tree at great labour and pains. Their two previous homes had been stolen, and were then in the possession of four iridescent thieves. But worse remained to follow. After the Woodpeckers had been at work for the best part of a fortnight, another pair of Starlings came along and impudently robbed the poor birds of their new home before they had had an opportunity of using it!

As an indication of the demand for breeding apartments in hollow trees, I will mention the case of a hole in an old apple tree. It was tenanted one year by a pair of Starlings, the next by House Sparrows, and the third by Great Tits.

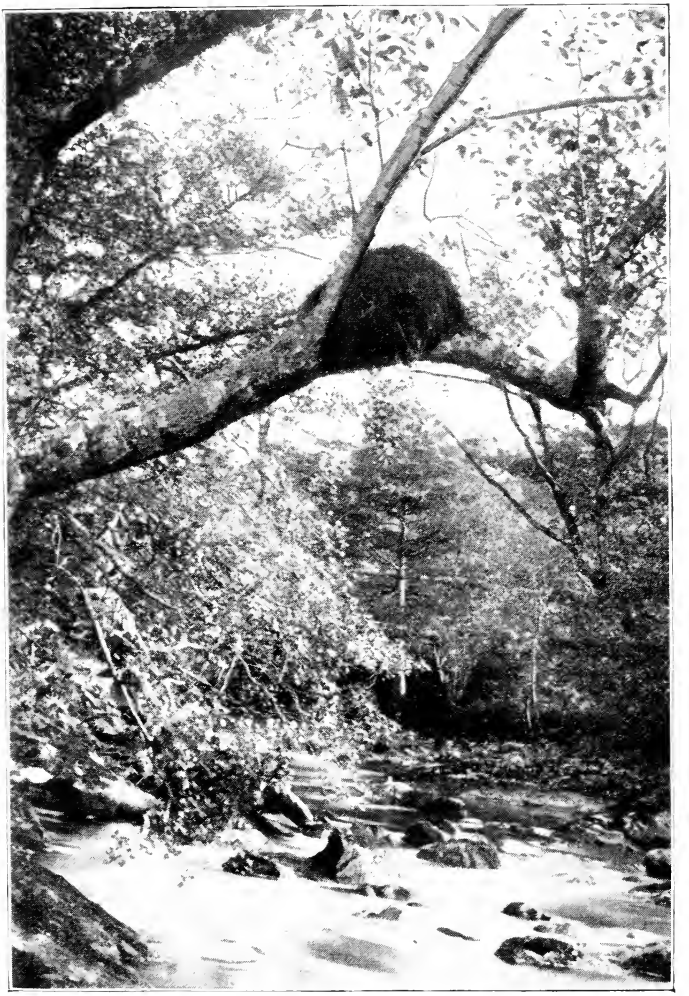
Sparrows have a bad habit of stealing House Martins' nests, and, in order to accomplish their wicked ends, will, upon occasion, even turn the eggs of the rightful owner out and smash them. Indeed, I have known the little ruffians do this with each other's eggs when engaged in a noisy family squabble over the ownership of a box nailed up against a bedroom window for the encouragement of this impudent and aggressive species of our streets, which seems little in need of help from any quarter. Besides robbing House Martins of their wee homes of mud under our eaves, Sparrows steal the nesting holes dug in banks by Sand Martins, those hewn by Lesser Spotted Woodpeckers in trees, and even the abodes prepared by Nuthatches, which

plaster up a hole in some hollow tree until no bigger robber could squeeze in and out.

The jolly, honest-looking little Brown Wren will, upon occasion, give way to temptation and deliberately steal quantities of nice soft moss from the sides of some other bird's nest whilst its owner is away in search of food.

Some Rooks are arrant thieves, and I have sat and watched them steal sticks from the nests of more honest and industrious neighbours whilst these were absent looking for additional materials. They will even venture to abstract twigs from the great Heron's stately mansion of sticks, and it is quite laughable to see them dash away when the enraged owner suddenly turns up, bent on punishing the rogue with a thrust from his long, spear-like bill, which will easily transfix a rat.

I once watched a very industrious old Gannet from close quarters building her nest on the narrow ledge of a dizzying ocean cliff, and directly the poor bird turned her back to go in search of another piece of seaweed, down flew a cunning member of the same species from a ledge above, seized a piece of the honest bird's materials, and hastened away to her own nest with it. By-and-by, along came the owner of the lower nest with a great long riband of seaweed which trailed in the air behind her like the tail of a boy's kite. No sooner had she placed it in position and departed for more, than down swooped the robber, and, in extracting the choice



DIPPER'S NEST IN TREE (*p.* 46).

morsel, tore the nest about in such a shameful manner that I felt angry and strongly tempted to hurl a stone at her. When the poor builder of good character returned and saw the injury that had been wrought, she gazed in silence for some moments, then gave utterance to a few deep guttural notes and looked about her inquiringly. All her neighbours, including the thief, were busy putting into position the seaweed and grass they had just acquired.

The injured Gannet did not spend much time bemoaning her loss, but set to work repairing the damage, and then, taking wing, sailed away out of sight round a great promontory of rock. In a minute or two, down came the thief once more. Whether the honest bird's immediate return was intentional or accidental I do not know, but suddenly back she flew and caught the robber in the very act. She was naturally very furious, and at once fell upon the thief. A desperate battle ensued, and finally both combatants rolled off the ledge and over the cliff, a confused bundle of wings, legs, heads, and tails.

I know it sounds funny to say that some birds take in lodgers, but such is certainly the case, for a pair of House Sparrows may frequently be seen busy entering and leaving the foundations of a Rook's nest where they have a thriving family housed, entirely unmolested by their sable landlord and landlady upstairs.

Starlings have no fear of such great birds as Ospreys, and sometimes find lodgings in the basements of their eyries, where they rear their noisy broods in perfect security.

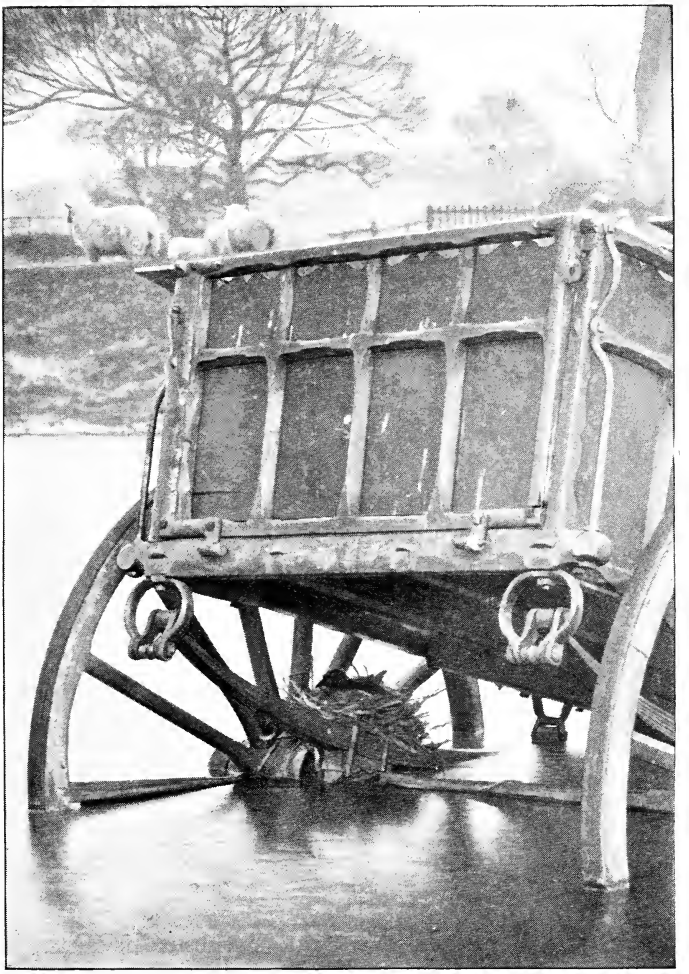
Of course, gregarious birds, such as Rooks and House Martins, that live in colonies, often have their nests so close to each other that they touch. I have seen as many as thirty-seven Rooks' nests in a single tree, and have counted no less than fifty-two Martins' nests under the eaves of a single small stable. Last June the watchers over the sea-fowl breeding on the Farne Islands showed me fifty clutches of Sandwich Terns' eggs on forty-five square feet of ground.

Other birds that are not gregarious, and consequently do not live in companies, sometimes make their nests close together, and I have seen a pair of Eider Ducks' homes actually touching. The illustration on page 37 represents the nests of a Great Crested Grebe and Coot within a few feet of each other. They were both occupied at the time the photograph was taken.

Some birds evince great love for a favourite old nesting-place. Successive generations of Peregrine Falcons and Blue Tits have been known to occupy the same breeding site for close upon a hundred years with hardly a break. Kestrel Hawks have been found rearing a brood on the same ledge of rock for upwards of twenty years in unbroken succession, Eider Ducks for seven, and Herons for fourteen.

An Osprey in the Highlands of Scotland repaired its old eyrie spring after spring for so long that it eventually reached a height of nine feet, when it was blown down by a gale of wind.

I mentioned in the opening pages of this chapter the case of a Great Tit building its nest in an old structure belonging to some other bird in a hedgerow, instead of following the general rule of the species and placing it in a hole. I will now relate a few other interesting departures from usual habits on the part of birds belonging to widely different species. Blackbirds and Thrushes generally place their nests in evergreens, bushes, hedgerows, amidst ivy growing round the trunks of trees and against walls, and in similar situations; but specimens are sometimes found right down upon the ground, where one might expect to meet with those of pheasants and partridges. On the other hand, instead of the two latter species sticking to their usual habit of breeding on the ground, where their young ones will want to commence running about directly they are hatched, they are occasionally discovered in such elevated situations as deserted squirrels' dreys in trees and on the tops of ricks. Wild Ducks have been found breeding in old Carrion Crows' nests in high trees. Rock Pigeons build on ledges in ocean caves, but occasionally both Rock Pigeons and Jackdaws condescend to occupy a humble rabbit's burrow. The Dipper fixes its nest in some fissure of rock or some hole in a stone bridge



WATERHEN'S NEST ON CART SPRING (*p.* 46).

spanning a mountain torrent, if it cannot find a suitable ledge behind or close to a waterfall; but occasionally I have found one in a tree, as shown in our illustration (p. 41), which was recently secured in Highlands of Scotland. Starlings rear their chicks in trees, old ruins, thatches of ricks, holes in rocks, and similar elevated situations, but I have found nests on several occasions in holes in the ground and amongst loose stones.

These instances of departure from nesting rules lead one on to the interesting cases of nests in curious situations. Common Sparrows have been found breeding in all kinds of strange places—from the inside of a railway station gong sounded more than one hundred times in twelve hours, to the cartridge-box of a gun-carriage, in spite of the fact that the piece was fired twice every day; in a stone lion's mouth, and in the skeleton of a bullock's head. I have myself seen Robins' nests in old coffee-pots, teapots, kettles, watering-cans, biscuit-boxes, jam-jars, hand-baskets, and the hubs of cartwheels; also Tits' nests in street-lamps, letter-boxes, old pumps, mowing machine knife-boxes, and packing-cases. The illustration on the preceding page shows a Waterhen sitting on her nest built upon the spring of an old cart which had been wheeled into a pond and left there for a while. Last year a Chaffinch built her nest under the chin of the effigy of a woman kneeling on the top of a grave-yard monument, and was seen brooding just as

contentedly as if she had been occupying a little cup-shaped home on a hawthorn bough.

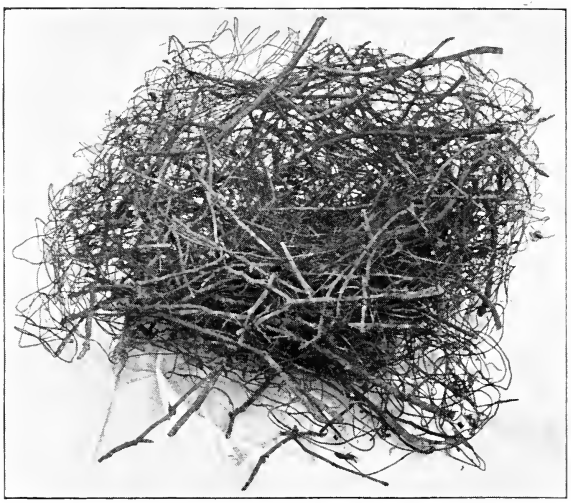
I could, if space would permit, multiply instances, from my own experience and that of other observers, of birds' nests built in all sorts of strange places.

From curious situations for nests it is a natural and easy step to pass to a consideration of uncommon materials employed in their construction.

A Heron in Nottinghamshire built a nest of wire, as shown on the next page, and a Blackbird in Surrey built its nest amidst a collection of old fence-wire in the same season (p. 49). A pair of House Sparrows in Switzerland made their nests not long ago entirely from old watch-springs. Chaffinches sometimes decorate the outsides of their nests with bits of paper, and I once found one studded all over with small pieces of an old newssheet. Kites have quite a love for bits of flannel, rags, and paper wherewith to build their nests. A very strange thing once happened to a well-known English naturalist in connection with this curious habit of the Kite. He was away in some wild part of Spain studying birds, and, on climbing to a Kite's nest, was astonished to find part of an old newspaper in it containing an account of the assassination of President Lincoln, of which lamentable crime he then learnt for the first time.

Upon climbing to a nest belonging to this interesting bird, away up amongst the Welsh mountains last spring, my brother was surprised to find

it lined with quite a large piece of flannel. A friend standing at the bottom of the tree called out to him to turn the material over and see if there were any eggs beneath it, explaining that a naturalist once put a Kite off her nest day after day and was greatly



HERON'S NEST MADE OF WIRE (*p.* 47).

puzzled to know why she sat on it, because there were no eggs to be seen from a high, adjoining rock which commanded an excellent view of the interior of the structure. One day his curiosity prompted him to climb the tree, and upon reaching the nest he discovered that a piece of flannel, forming a great part of the lining of the nest, had flapped over the eggs, and the brooding bird sat on the top of it.

Turning aside for a moment, it is sad to think of the poor Kite's career as a British species. During the reign of Henry VIII. it was so numerous

BLACKBIRD'S NEST IN WIRE (*p.* 47).

in the streets of London that it acted the part of a useful scavenger, would take food from the hands of children, and was one of the wonderful sights of the town to all foreigners. It has so decreased in numbers since that time that only one or two pairs are now left breeding in this country, and ornitho-

logists fear that unless something is done to protect its eggs, which are highly valued by collectors, it will become extinct at no distant date so far as the British Islands are concerned.

I have seen a Raven's nest made almost entirely of the wooden hoops belonging to barrels that had been washed ashore by the Atlantic waves and broken up on the beach of an island in the Shetlands.

Some strange things have been found in birds' nests from time to time. A soldier's jacket and an arrow, amongst other articles, were once discovered in that of a Gannet at St. Kilda.

I have seen Shags' nests adorned with freshly-gathered wild flowers, and Sandwich Terns' eggs lying on a beautiful collection of tiny blue mussel shells, which appeared to have been gathered for purely decorative purposes.

Although birds have no scaffolding to give way or iron girders to collapse and injure them, they yet suffer from fatal accidents whilst building their tiny homes. Town Sparrows are sometimes hanged by becoming entangled in bits of string they pick up from the streets to build their nests with behind sign-boards and rain-pipes. Chaffinches are occasionally strangled by getting the horsehairs with which they line their charming little homes twisted about their necks. House Martins and Skylarks have both been found hanged by their own efforts to escape from the entanglement of straws in or near their nests, and instances of mishaps of this character

could be mentioned in regard to many other species.

Some birds never dream of building a nest of their own, but remain content to use the old home of another species. The Long-Eared Owl and the Kestrel Hawk afford conspicuous examples of this kind of domestic idleness, for they content themselves with the disused nests of Crows, Magpies, Herons, Sparrow Hawks, Ravens, Wood Pigeons, and even condescend to utilise a second-hand Squirrel's drey. The Long-Eared Owl has been known, when unable to find a suitable deserted home, to descend to the earth and drop its eggs into some sheltered hollow there, and the Kestrel Hawk often deposits its eggs on the ledge of a precipice, but has never been known, so far as I am aware, to attempt to make any sort of a nest of its own beyond that afforded by the undigested bones and down of mice which the bird ejects in almost dry pellets. These pellets, or "castings" as they are called by naturalists, are sometimes very plentiful on the ledge of a favourite cliff, and when broken up by the Kestrel form a beautiful soft bed for its eggs to rest upon.

Thrushes and Blackbirds both occasionally build on the remains of each other's old nests, and Robins, Pied Wagtails, and different members of the Tit family have been known to build inside them. A few years ago I found a very strange-looking Hedge Sparrow's nest in a bundle of pea-

sticks standing in the corner of a kitchen garden. It was twice the height of an ordinary specimen, and, as the brood of young ones that had been reared in it had flown, I took it carefully to pieces and discovered that the lower half consisted of what had no doubt been an earlier effort containing a clutch of addled eggs.

In the spring of last year a Song Thrush built a very pretty little nest on the gnarled roots of a tree growing on a high bank near my home. She was soon robbed by a mischievous boy, and the empty nest remained all the following summer, autumn, and winter in an excellent state of preservation because the overhanging bank shielded it from rain, snow, and falling leaves. At the end of March of this year a young Thrush commenced to lay in it. I feel sure she was not the original owner, because the eggs of the second clutch were smaller than those of the first, and small eggs are generally laid by young birds the first breeding season.

Before passing on to describe different types of nests and their uses, I must not forget to mention the names of a few prudent birds that build extra nests for different purposes.

The Common Skua, or Bonxie, often constructs a spare nest near to the one occupied by its pair of eggs, and when the latter is swamped by a heavy rainstorm, has been known to remove her possessions to her higher and drier home.

The Great Crested Grebe and the Waterhen both

build spare nests, which some naturalists think are constructed as landing stages for their chicks. The nest figured in our illustration had been built by the latter bird for the accommodation of its young.

WATERHEN'S SPARE NEST.

Everybody knows that the Common Wren makes two or three spare nests for every one occupied by eggs, but nobody is quite sure what purpose these extra empty houses, which are known as "cocks' nests," are intended to serve. They never contain the inner lining of soft feathers and down which declare the character of a finished abode with certainty. Some naturalists have given it as their opinion that they are built to be used as sleeping apartments; but my investigations do not bear out this theory, for I have found the birds comfortably

tucked up for the night under the thatch of a rick, whilst "cocks' nests," built only a few feet below, were left quite unoccupied. I have, however, found both Blue Tits and Cole Tits sleeping in these unfinished Wrens' nests, and they did not at all relish being visited by a glaring bull's-eye lantern at ten o'clock on a dark, cold winter's night.

Some ground-building birds, such as the Redshank, are quite fastidious about the selection of a suitable site for their nests, and scratch out a lot of little hollows in and close beside big tufts of dead grass before they finally decide upon lining one and commence to lay their eggs in it.

It is truly surprising to consider to what an extent wild creatures unconsciously help each other. Rabbits scratch the ground a good deal during the night, in the springtime especially, and dislodge quantities of nice soft moss and dead grass, which birds are very glad to use for nest-building purposes. The same lively quadrupeds also quarrel and fight during the hours of darkness, and in the course of their struggles often pluck and scratch liberal quantities of down off each other's bodies. In the morning along comes some sharp-eyed feathered dweller in the neighbourhood, and takes it away forthwith to line a nest. Cows and horses rub themselves against gate-posts and walls, and in doing so detach hairs which are very useful to a dozen kinds of birds amongst which such material is fashionable for nest lining. Sheep lose tufts of

wool from their sides in the springtime by grazing too near brambles and briars; along comes a Missel Thrush, very glad of the opportunity of utilising the material, for it will entangle itself amongst the lichens growing upon the branches of some tall tree in the forks of which she has decided to build her nest. This bird breeds in the early spring, when there are no leaves upon the trees, and the wool used as a foundation effectually anchors her little household to its surroundings at a time when fierce spring gales and sleet come whistling through the woodland.

The feathers of birds that die a natural death are sometimes used as a lining for nests.

A year or two ago I had a very comical illustration of the old saying that it is an ill wind that blows nobody any good. Upon looking over a wooden fence into a field I saw two Roosters hard at it fighting to see who should be master of the situation. They were making each other's hackle feathers fly round in all directions, and, to my surprise, an old cock Sparrow stood by, enjoying what no doubt appeared to him to be the best of fun, for he picked their feathers up as they fell and flew away as hard as he could go with great billfuls to his nest.

CHAPTER III.

SOME REMARKABLE NESTS AND EGGS (*continued*).

Open-topped Nests—The Artfulness of the Carrion Crow—Covered Nests—Diggers of Tunnels and Pits—The Wicked Boy who Stopped-up Sand-Martins' Nesting Holes—Builders in Holes in Trees, Rocks, Walls, and Banks—Birds that Hiss when their Nests are Molested—Birds that Cover their Eggs when Leaving their Nests—Birds that it is Difficult to See—The Eider Duck on her Nest—Birds that Do without Nests—More Exceptions to Nesting Rules—Differences in Eggshells—Sizes of Eggs—Shape as Tending to Preservation—Colour and Markings—Number of Eggs Laid by Birds of Different Species—The Cuckoo and its Eggs—Incubation.

THERE is a fierce struggle for existence constantly going on amongst wild birds, and as the breeding season is the fullest of danger both to brooding parents and to the contents of their nests, it naturally behoves each species to make such a nest as will best suit its habits and ensure the greatest amount of safety to its eggs and helpless chicks.

In order to show the utility of different kinds of nests, I propose to divide them roughly into six separate classes—(1) open-topped nests, (2) covered nests, (3) nests in tunnels purposely dug for them, (4) nests in natural holes, (5) nests covered over by birds when leaving voluntarily, (6) nests that are

not nests at all in the true sense of the word; and to give some particulars of each.

I. Open-topped nests are by far the most numerous. Those built by Thrushes, Blackbirds,

LINNET'S NEST.

Hedge Sparrows, Chaffinches, Goldfinches, and Linnets are all sufficiently deep and cup-shaped to prevent the eggs or young from falling out. They are, as a rule, well hidden in evergreens, thick bushes, and

hedgerows. I used to wonder, when I was a boy how the builders of these beautiful nests managed to make them so wonderfully round and smooth inside. I have since learnt, by watching some of them at

TREE PIPIT'S NEST HIDDEN IN GRASS.

work, that they accomplish their end by placing the materials in position and then twirling round and round, all the while rubbing and pressing their breasts against the inside walls of the structure.

The ground colour of the eggs deposited in every one of them contains green or blue, which are much more useful colours than white would be in preventing discovery.

THE SAME NEST UNCOVERED BY THE PHOTOGRAPHER.

The nests of Snipe, Dunlin, Larks, Pipits, the Reed Bunting and Yellow Wagtail are all fairly deep, open at the top, and well hidden amongst rough grass, tufts, and rushes, as illustrated by the pair of

pictures of a Tree Pipit's nest as it was found and after the eggs had been opened to view by the parting of the grass in front. The eggs of each of them are coloured in browns and greys of various shades, so that if seen they will not afford a striking contrast with the dead grass or horse-hair forming the lining of the nests in which they lie.

Other open-topped nests belong, as a rule, to birds capable of defending their contents either in colonies or in pairs, to say nothing of the inaccessible situations of some of them in the faces of cliffs and near the tops of tall trees. Seagulls of various species, Rooks, Ravens, Crows, Eagles, and Peregrine Falcons belong to this division.

Of course, there are some builders of these open-topped nests that have to provide against other dangers than discovery and destruction by their natural enemies. The Carrion Crow often places its nest amongst the slender branches of a tree where it would be dangerous for even a boy to climb to it. But the surmounting of that danger creates another. The nest is violently swayed to and fro by every strong wind that blows, and were it at all shallow the eggs would roll out and be hurled in fragments to the ground below. The wise builder therefore constructs a deep cup-shaped home which affords safety to anything in it. I must confess that I admire this cunning bird for its wonderful sagacity. If approached by a gamekeeper with a gun whilst sitting on its nest, it does not fly off

as about ninety-nine out of every hundred birds would do—namely, straight away. No, that would give the arch-enemy in velveteen too good a chance by half; therefore the crow slips over the edge of its nest, darts straight down through the branches like a plummet, and flies off with the tree between it and its would-be assailant.

Another species which builds a very deep cup-shaped, open-topped nest is the Reed Warbler. The bird attaches its little home to three or four reed stems, and during the prevalence of strong winds it is roughly swung and swayed in all directions night and day.

II. The builders of covered nests are the Dipper, Common Wren, Long-tailed Tit, Chiffchaff, Wood Wren, and Willow Warbler, to say nothing of the House Martin and Barn Swallow, both of which build so as to have a covering touching, or very close to, the tops of their homes. Every one of these birds lays an egg with a white ground colour, two species out of the eight have no markings whatever on them, and the rest are spotted with red or reddish-brown.

The Dipper's nest is a most ingenious and serviceable structure. I have seen it dripping water splashed on to it by a roaring mountain torrent, and almost washed away by part of the flood oozing through the crevices of the rock upon which it was resting, and yet the brooding bird within sat perfectly dry in her nest of leaves. The front of the

domed roof comes so far down that it is impossible for a stray splash to find its way on to the eggs or the young. Sometimes it is built right away behind a cascade through the falling waters of which the bird is obliged to fly on leaving and entering her nest. I once saw one driven right down into the foaming cauldron by the force of the flood when leaving her nest, but she very quickly gained wing and flew away none the worse for her experience.

The Common Wren is a wonderfully adaptive bird. When making its nest in the side of a hay-rick it invariably uses straws for the front of its home, and, when making it in a wood, it uses dead leaves, which look so very like an accidental collection dropped between the sprouting twigs, where some bough has been lopped off, and the trunk, that I have on several occasions passed one by. If built amongst ferns on a bank it is generally made of dead fronds, and under a mossy, overhanging bank it is made of moss. I used to think that the bird really employed its materials with the fixed intention of deceiving its enemies, but one day I found a nest in the side of a haystack and the whole of its front was made of moss and dead leaves picked out of a ditch directly beneath. Since that I have watched members of the species at work, and have been surprised at the very short distance they travelled for their materials, a fact which has driven me to the conclusion that they use whatever comes handiest, as a rule.

LONG-TAILED TIT AND NEST (*p.* 64).

The Long-tailed Tit, or Bottle Tit, as it is called in recognition of the likeness of its nest to a bottle, is a clever little weaver. It makes its home of moss, spiders' webs, and lichens, all well interwoven and felted. The interior is often a literal feather-bed; it is so liberally lined that upon one occasion a Scottish naturalist counted no less than two thousand three hundred and seventy-nine separate feathers in a single nest. What is more curious still is that whilst the female is brooding the male comes along and keeps her company by roosting alongside her in the nest every night. I have frequently put my finger into one and found both birds sitting in it. Our illustration (p. 63) will naturally suggest the question, "What do the birds do with their long tails whilst sitting inside their little bottle-shaped house?" They dispose of them in the most ingenious fashion. When sitting at rest they fold their long tails over their backs, and the tips of these appendages point out of the entrance hole in the same direction as the tips of their bills.

III. The diggers of tunnels and pits are the Sand Martin, Kingfisher, Puffin, and the Woodpeckers, all of which lay white eggs unspotted, with the exception of the Puffin, the single egg of which is indistinctly marked with a few spots of pale brown and grey.

The first named bird excavates its gallery with its bill, and works in all positions, sometimes being absolutely upside down. I have examined many tunnels in process of construction, and always found

them deepest in the centre, just as if they had been made by a sharpened stick thrust into the bank. They vary in depth from ten or twelve inches to three or four feet. The size of the chamber and quantity of nesting materials used also vary considerably. The galleries invariably rise from the entrance to their termination, as they do also in the case of those used by Kingfishers, so as to allow any water which might percolate through the earth above to find an easy exit.

Whilst out trout-fishing once on a Yorkshire stream, I was horrified to discover that a wicked boy living in a village close by had been guilty of the unspeakable cruelty of

GREAT SPOTTED WOODPECKER'S NESTING HOLES.

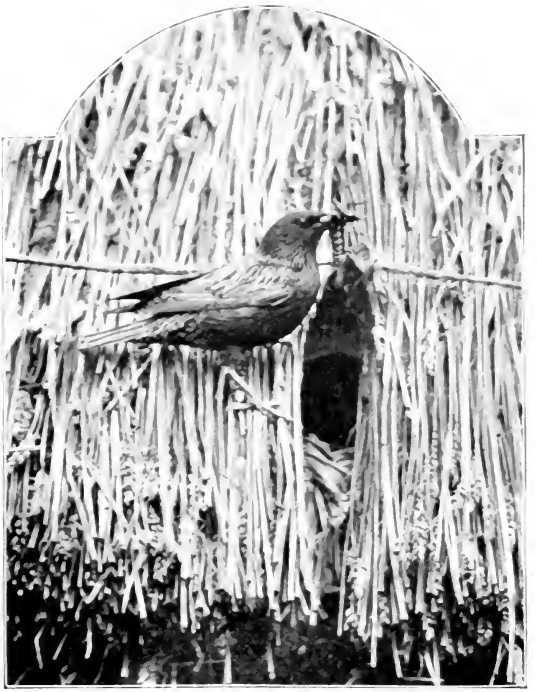
barring up a number of Sand Martins' nesting-holes with stones. The courageous little birds had in nearly every case set to work digging a fresh tunnel round the obstruction. In a few cases they had got through, and, wherever they had not, I at once, of course, put their minds at rest by removing the stones.

The Kingfisher does not always trouble to dig its own tunnel, but makes shift with an old one excavated by a Sand Martin or occasionally by a Water Rat. The bird feeds upon small fish, which it swallows whole, and, like the Kestrel, casts them up in pellets. These, with the dry mould at the bottom of the chamber, form the bed upon which the Kingfisher's eggs are laid.

The illustration on the previous page shows several holes dug by a Greater Spotted Woodpecker at different breeding seasons for the reception of its eggs. At the time the tree was photographed a Pied Flycatcher and a Great Tit were also nesting in holes excavated in it by the Woodpecker.

Puffins love a soft, low, peaty island upon which to breed, for then they can be quite happy digging their numerous tunnels, until the whole place becomes so honeycombed that the earth feels as if it were giving way. It is said that the birds become so absorbed in their task whilst excavating that they pay no heed to a human visitor, and will at such times allow themselves to be taken by hand. If they should arrive upon an island already tenanted by rabbits, they do not trouble to

dig their own tunnels, but simply eject the bunnies and quietly take possession of their homes. It must,



STARLING GOING TO NESTING HOLE IN RICK.

indeed, be a laughable sight to see an old mother rabbit rushing out of her hole with a little Sea Parrot, as the bird is sometimes called, hanging on to her tail by its great Fifth-of-November looking bill.

IV. Builders in holes in trees, rocks, walls, ricks, and banks are the Screech Owl, Tawny Owl, Stock

THE GREAT-CRESTED GREBE'S NEST WITH EGGS COVERED BY PARENTS.

Dove, Rock Dove, Wryneck, Nuthatch, Great Tit, Blue Tit, Cole Tit, Marsh Tit, Crested Tit, Stormy Petrel, Fork-tailed Petrel, Starling, Wheatear, Redstart, and Pied Flycatcher. The first five of these birds lay pure white eggs entirely unmarked, the next nine white eggs, more or less spotted with red or reddish-brown, and the last four lay pale blue or

greenish-blue eggs without markings, except the Pied Flycatcher, whose eggs are said to be occasionally spotted with reddish-brown, although I have never once met with marked specimens.

The Wryneck and the different species of Tits named above possess the curious habit of hissing like a snake when they are molested in their breeding-holes, and I

THE SAME NEST WITH EGGS UNCOVERED.

once saw a number of inexperienced boys from London get a rare fright. They saw a member of the Tit family enter a hole in an old stump, and one of them thrust his hand in with the evident intention of capturing her, but there was such a spitting and hissing that he withdrew it on the instant, and, securing a stick, was about to try to dislodge the unfortunate bird, when I sprang from my hiding-place with a suddenness that startled the little crowd, and saved the Tit from further molestation.

The Owls and the Petrels which I have mentioned enter and leave their nesting-holes during the hours of twilight or darkness, and the Petrels have a peculiar habit of beguiling the tedium of brooding by uttering a warbling kind of chatter, which they are said to indulge in both day and night.

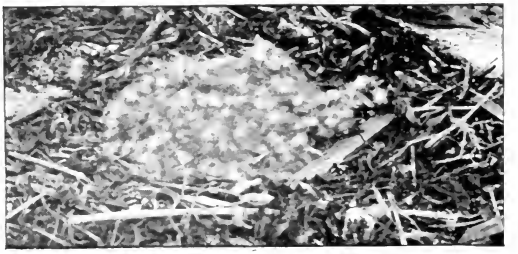
V. The nests of the Great Crested Grebe, Lesser Grebe or Dabchick, Wild Duck, Eider Duck, Pheasant and Partridge, are all open-topped, but the parent birds, when leaving them of their own accord, take the wise precaution of carefully covering over their eggs. None of these birds make conspicuous-looking homes for themselves. In fact, those of the Grebes are in most cases mere rafts of rotting water-weeds moored to surrounding reed stems, and they look so much like accidental collections of dead vegetation that hardly one in a thousand people taken indiscriminately out of the streets of any large town

would ever for a moment suspect them to contain anything in the nature of birds' eggs. The illustrations on pages 68 and 69 show a Great Crested Grebe's nest just as the parent bird left it, and then with her covering removed so as to show her little secret.

In the case of Ducks and the Pheasant we meet with an exceedingly interesting provision of Nature for their preservation. The male birds wear gaily-coloured, showy dresses during the breeding season, and are therefore allowed to take no part in the important duties of incubation, as their brilliant plumage would only serve to advertise the whereabouts of their nests and eggs, the destruction of which would be sure to follow. Their female companions, on the other hand, are clad in sober brown feathers of varying shades, so wonderfully arranged that their wearers look like a part of their natural surroundings. Is it not astonishing that a hen Pheasant sitting on her nest at the foot of a hedgerow should, by its artful colouring, resemble sunlight and shadow so much that one's first glance appears to go clean through her, and her presence is often only revealed by her eye? The birds themselves evidently know the value of a dress which harmonises well with their surroundings, and sit very closely, without the slightest movement, until they are compelled to seek safety in flight. How very closely the Eider Duck sits may be understood when it is stated that I have on a good many occasions stroked

EIDER DUCK'S NEST WITH EGGS UNCOVERED.

EIDER DUCK ON NEST.



EIDER DUCK'S NEST WITH EGGS COVERED WITH DOWN.

the bird on her back without in the least disturbing her; and this is all the more wonderful when it is taken into consideration that she is a very shy bird when not engaged in brooding.

In order that my readers should be in a position to understand and appreciate the breeding habits of the bird that supplies us with the materials for the manufacture of the light warm quilts under which most folks like to nestle on cold winter nights, I think it well to show by illustration an Eider Duck on her nest, a nest showing the eggs, and one with the down carefully folded over so as to hide its contents. The down is plucked from the underparts of the bird's body in increasing quantities as incubation advances, and serves another exceedingly useful purpose besides that of hiding the eggs. It prevents an undue escape of heat, and enables the mother Duck to remain away as long as three hours at a stretch without fear of injury to her forthcoming young.

The eggs of these birds that make open-topped nests and cover their contents when they leave them voluntarily are—Grebes, white when newly laid: Ducks, greenish or buffish white; Pheasant and Partridge, olive brown.

Individual members of other species sometimes find it useful to hide their nests, and I have known a Blackbird dispose her little home so cleverly in the side of a hayrick that its presence was only detected by a keen-eyed naturalist discovering the

orange-coloured bill of the sitting bird protruding beyond the edge. Waterhens occasionally hide their homes in the most ingenious manner. When nesting amongst reeds, they bend some of them down, as shown in our illustration, so as to prevent the eggs from being seen from above, instead of leaving them plainly visible as they were in the nest shown on the opposite page. My brother and I once had the most convincing proof of the usefulness of this little dodge. We found a nest so hidden one morning, and, returning later in the day to photograph it, were dismayed to see half-a-dozen boys wading up and down in search of Waterhens' nests. We watched them from behind a blackthorn bush, and were delighted to see each of them wade within a

WATERHEN'S NEST IN REEDS.

couple of feet of our nest without discovering its presence. In the picture we have, of course, parted the reeds in front of the nest and taken our view from quite low down in front, so as to show the cleverness of the mother bird's idea.

WATERHEN'S NEST IN BRAMBLES.

VI. Birds that make no nest at all, or next to none, are Terns, Ringed and Kentish Plovers, Peewits, Stone Curlews, and Oyster Catchers, amongstothers. They breed upon the ground, and their eggs resemble their surroundings so closely that they are difficult to find. In such circumstances, a bulky nest would only serve to betray the whereabouts of the eggs, which the brooding birds, in nearly every instance, slip away from at the earliest sign of approaching danger.

Some individual Terns belonging to a colony breeding on a shingly beach have been known to carry quantities of pebbles on to the grass above tide reach, and, after making a miniature beach of their own, lay their eggs upon it. This is undoubtedly very clever, but, on the other hand, there are Terns, like human beings, that cannot leave well alone; for I once found some eggs, belonging to a member of this family, lying on a pavement of little blue mussel-shells, which looked conspicuous on the golden-grey sand, and, in turn, showed up the stone-coloured eggs and their brown and chestnut markings so distinctly that they could be seen from quite a distance.

Ringed Plovers do not, as a rule, indulge in a proper nest, but will sometimes, when breeding on a rocky shore, where there is very little sand or shingle, collect tiny shells and pebbles, and, placing them at the bottom of a shallow crevice, lay their eggs upon the top of them. Not long ago I found a nest belonging to this species made entirely of wee sandstone pebbles which the bird had lifted out of the dry bed of a tiny streamlet and placed on the bank where there was nothing but grass. This struck me as being a case of real wisdom, for the stones were deposited at such a point as would have been most likely to save the eggs from the consequences of a flood suddenly descending the channel of the stream.

There are very few rules which are not supplied

with their exceptions, and I now propose to mention a few remarkable exceptions to the rules prevailing in the different classes of nests of which I have spoken. For instance, both the Wood Pigeon and the Turtle Dove build open-topped nests and yet lay white eggs, which may sometimes be plainly seen through the twigs composing the flimsy platform upon which they lie by an observer standing at the foot of the tree or bush in which the nest is situated. And yet, in spite of this great drawback, the birds have increased in numbers in Britain during recent years, but, it must be pointed out, mainly owing to the strict preservation of game in the districts where they breed, which means the practical extermination of their natural enemies. The Fulmar Petrel and Solan Goose are exceptions, too, as they each lay a single white egg, but both breed on the most dizzying ocean cliffs—to say nothing of the facts that the former defends itself by squirting quantities of evil-smelling amber-coloured oil at its enemies, and the latter by vigorous pecks from a very formidable bill. Herons and Cormorants are also both exceptions, because they lay white or pale-blue eggs: but here again the parent birds are capable of taking care of their property.

The Whinchat and the Stonechat lay pale, greenish-blue eggs, sparingly speckled in the case of the former species with reddish-brown, yet both nest on or near the ground. I ought to add, however, that the nests are so splendidly hidden that

the colour of the eggs in them very seldom, if ever, betrays their presence.

Having thus dealt with the different kinds of nests and the useful ends they serve, let us pass on to consider the most interesting characteristics of the eggs they contain.

When I was a boy I used to think that the colour of a bird's egg would bear some sort of

FULMAR PETREL'S EGG. *p.* 77.

relationship to that of the bird which laid it, but experience soon taught me that such was by no means the case.

Egg-shells differ very considerably in character. Those of the Woodpeckers are smooth and polished, whilst those laid by Grebes are rough and chalky. Cormorants and Shags lay pale blue and pale green eggs respectively, but both are, as a rule, so thickly

coated with chalk that the real shell cannot be seen until the covering is scraped away.

A strange thing about a bird's egg is that an injury to the shell just after it is laid does not appear to do the coming chick any harm, provided the air be excluded.

One day a gentleman living in one of the eastern counties of England found a Blackbird's nest near his fruit garden, in which he takes great pride, and thinking that if he destroyed the four fresh eggs it contained the bird would set to work again at once and build a new one where he might not discover it, he thought he would waste her time. Taking a pin, he drove it right through each egg, and then went his way. The albumen welled up, filled each hole, hardened, and so effectually excluded the air that a fine strong chick emerged from each egg in due season.

A German scientist, of a rather inquisitive and certainly ingenious turn of mind, once took it into his head that he would like to watch a chick grow inside an egg. He at once set to work, and, with a number of delicate tools and the exercise of great care, he managed to remove a piece of shell and actually fix a tiny window in its place. Through this window he was successful in watching the development of the chick for four or five days

Eggs differ enormously in size, as may be seen from our illustration on the next page of the largest and smallest laid in the British Islands. The wee

specimen belongs to a Golden-crested Wren, and the large one to a Wild Goose. Of course, these extremes are easily beaten by birds of other

SMALLEST AND LARGEST BRITISH BIRDS' EGGS.

countries. For instance, some of the tiny Humming-birds of America lay a pair of eggs so small that they find room enough in a nest no bigger

RAVEN'S AND COMMON CURLEW'S EGGS (*f.* 81).

than a walnut shell, and the extinct Epyornis of Madagascar has left behind it the empty shells of

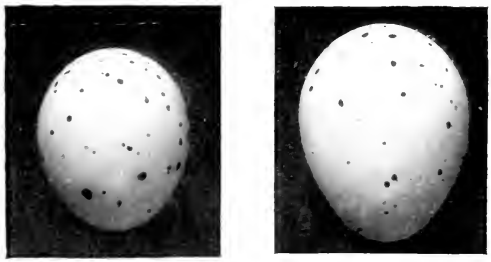
eggs capable of holding 12,000 of those produced by a Humming-bird, 150 of those laid by a Common Fowl, or nine dropped by an Ostrich. Just fancy sitting down to such an egg for breakfast, and having to crack its three-quarters-of-an-inch-thick shell with a coal-hammer!

Birds' eggs also vary greatly in size quite irrespectively of the size of the parent birds. A Common Curlew is a smaller bird than a Raven, but the illustration on page 80 shows how greatly their eggs differ in the opposite direction, although it is only fair to add that the former bird's full complement of eggs is only four, whereas the latter lays from five to seven. The explanation of the difference is that the young of the Curlew begin to run about among coarse grass, rushes, and heather directly they are hatched, and therefore need their additional size and strength much more than the young Ravens, which are carefully fed and tended by their parents in a nest until they are nearly full-grown, well-feathered, and able to fly.

The size and shape of eggs laid by birds of the same species also vary to some extent, as may be seen by a glance at the two Thrushs' and two Blackbirds' eggs on the next page. It is young birds that generally lay the smallest eggs, during their first breeding season.

Most people have seen the miniature eggs dropped by domestic fowls towards the end of the laying season, but I do not think it is at all

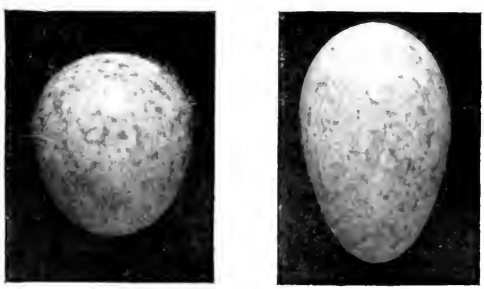
generally known that wild birds occasionally produce similar tiny specimens. Our illustration on the



SONG THRUSHS' EGGS (*p.* 81).

opposite page shows a Yellow Hammer's nest with one of these Tom Thumb specimens in it.

The shape of some eggs plays a wonderful part



BLACKBIRDS' EGGS (*p.* 81).

in their safety and even in the future well-being of the chicks they contain.

The Common Guillemot lays a single large egg on the top of some bare, flat rock-stack or the

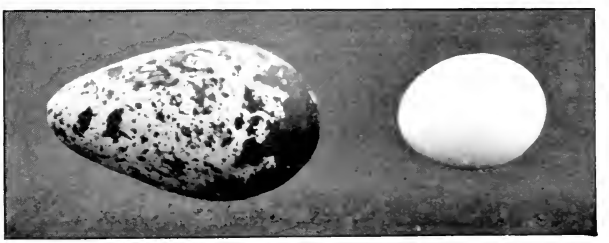
ledge of an ocean cliff, and makes not the slightest nest of any kind whatsoever—obviously very dangerous places to drop anything so liable to roll away to destruction as a bird's egg. But let us see how wonderfully the problem of preservation

YELLOW HAMMER'S NEST CONTAINING DWARF EGG (*p.* 82).

has been solved in this matter. The Common Guillemot's egg has been much elongated, so that when stirred by a strong gust of wind or by the parent bird suddenly leaving it, instead of rolling away like a marble, it spins round on its own axis like a boy's top lying on its side, describes a small circle, and is thus saved. Of course, even this beautiful provision of Nature does not always prevent Guillemots' eggs from being destroyed, for they are

sometimes laid on ledges so narrow that the slightest rough movement makes them slip off before they have a chance of describing a quarter of their small circle, and I have seen them fall in a shower into the sea when the sitting birds have suddenly been frightened away by the discharge of a tourist steamer's brass cannon.

This illustration shows a Common Guillemot's egg beside that of a Tawny Owl, which is usually laid



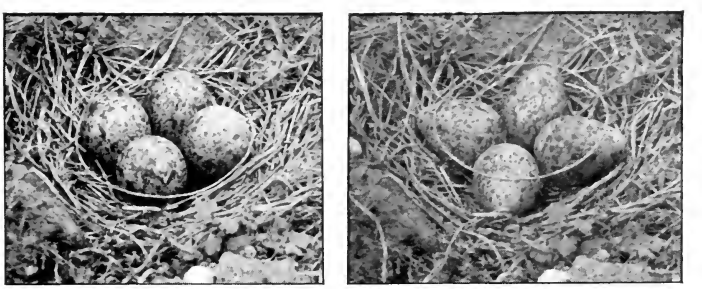
EGGS OF GUILLEMOT AND TAWNY OWL.

in a hole in a tree, rock, old ruin, or some other place where it has no chance of rolling about. Were the two species to change places for a little while we should very soon have none of the latter birds left alive.

In cases where chicks run about directly they are hatched, it is, of course, necessary that all the size and strength obtainable should be secured. With this end in view, the eggs of the Lapwing and other birds belonging to its family are large, and so pear-shaped that when lying in the nest, as

shown in our illustration, they practically cover a square and prevent the waste of much-needed space between them. I have over and over again tested the mother bird's appreciation of the value of this shape as a space economiser by turning one of her eggs sharp end outwards, for she always promptly altered my arrangement when she returned. Anyone taking a piece of wire and making a ring round a Lapwing's eggs with it as they lie in the nest just as the bird left them, and then turning them all so that their round ends are in the centre, will find that their sharp points protrude such a long way over the wire, as shown in the illustration below, that they are much less easy to cover by the parent bird.

The colour and markings of some eggs play a very important part in their preservation. Those of the Kentish and Ringed Plovers are splendid examples of protective coloration, for they often



PEEWIT'S EGGS, (1) WITH POINTED ENDS IN, (2) WITH POINTED ENDS OUT.

match so closely the pebbles upon which they lie that they are difficult to distinguish from a distance of only a few feet, and are then only discovered, as a rule, by their greater regularity of outline than the stones around them. In order to demonstrate the value of this wonderful provision of Nature, we photographed a clutch of Ringed Plover's eggs just where the bird laid them, and then a similar number of Starling's eggs in the same place (see pp. 88 and 89). The object-lesson brings home to one the value of harmonising colours when there is no nest in a rather striking manner.

The colouring of birds' eggs varies in richness and beauty with age and the condition of health of their layers. I have seen a Blackbird's eggs quite unmarked, those belonging to a Starling pure white instead of pale blue, specimens laid by a Chaffinch pale greenish-blue without a trace of the usual reddish-brown suffusion or dark markings; and once I found a dead Wren sitting on a clutch of eggs without a single one of the usual brownish-red spots on them.

An interesting point in reference to the coloration of birds' eggs is that, although they may vary very widely indeed in a species, an individual bird of that species appears to be bound down to a single pattern. For instance, eggs laid by Common Guillemots are white, cream, yellowish-green, pea-green, blue, reddish-brown or purplish-brown in ground colour, with every imaginable shade between, and are

spotted, blotched, and streaked with black, dusky-brown, greyish-brown and other tints, but each of these varieties is produced by a different bird, which goes on producing similarly tinted eggs if any accident should happen to the first or second laid. The gatherers of sea-birds' eggs at Speaton Cliffs, near Flamborough, in Yorkshire, asserted this a long while ago; and whilst my brother and I were at St. Kilda I asked the fowlers there if this coincided with their experience, and they answered that it did; and during our stay on the island I had an opportunity of confirming the statement for myself.

A strange thing about the eggs of the House and Tree Sparrows is that one in each clutch is generally covered with much bolder markings than the rest.

The number of eggs laid by birds of different species varies very considerably, in accordance with the food supply procurable for the chicks, their habits, and their defensive capacity.

The Petrels, Puffin, Common Guillemot, Razorbill, and Gannet lay a single egg: the Pigeons two; Lapwing, Golden Plover, Snipe, Common Curlew, and other members of the wading-bird family, four. The great majority of birds do not lay a fixed number of eggs. Eagles vary from one to four, but generally have two: Gulls two to three, sometimes four: Ducks five or six to from eight to fifteen or sixteen: Tits five or six to ten or a dozen: Partridges ten to eighteen or twenty—indeed, as

many as thirty-three have been found in a nest, but they were undoubtedly the production of two females.

This brings us to the question, Do birds lay in each other's nests? Undoubtedly they do, and, what is more, a member of one species will

RINGED PLOVER'S EGGS AS LAID (*p.* 86).

drop its eggs into the nest of a bird belonging to an entirely different one. Thrushes and Blackbirds occasionally mix their eggs, and the Pheasant is quite notorious for its carelessness in this way, and has been known to lay in the nests of the Common and Red-legged Partridge, Red Grouse, Capercailzie, and Wild Duck. Teal and Red Grouse have also been known to drop their eggs into the

same nest once at least. I have seen a Coot's egg in a Great Crested Grebe's nest, and those of Blackbirds and Thrushes mixed, but in neither instance could I be sure that they had been placed where they were by the birds and not by some experimentally minded human being.

STARLING'S EGGS IN THE SAME NESTING PLACE (*p.* 86).

Anyone making a close study of Nature and the ways of her children is constantly encountering strange freaks of behaviour. Last summer, whilst staying in the ruins of St. Cuthbert's Tower on the Farne Islands, I went out with my friend Mr. Paynter, the greatest friend of Seafowl in the British Islands, and he showed me a Lesser Black-backed Gull's nest containing three eggs which were being

sat upon by an Eider Duck. The two birds had nested within a few feet of each other; and as the Lesser Black Back or some of its neighbours had sucked the Eider Duck's eggs — the shells of which were lying scattered round — she had promptly retaliated by usurping the Gull's nest and eggs.

Of course, everybody knows of the Cuckoo's strange habit of making other birds do its work at the expense of their own offspring. Cuckoo's eggs are only about one quarter the size they ought to be in proportion to the bird that lays them; they vary in colour more than those of almost any other bird, and have been found in the nests of upwards of a hundred different species. Some naturalists think that the bird has the power of adapting the colour of its egg to that of the foster-parent, into the nest of which it drops it. Two Cuckoos' eggs have frequently been found in one nest, and on rare occasions even three. There can be no doubt that the egg is first laid and then taken in the bill and safely deposited in the nest of the bird selected to become the foster-parent, for it has been found in covered nests, and Cuckoos have been shot with their eggs in their bills.

The period of incubation varies considerably. Some birds, such as Tits, Thrushes, and Blackbirds, sit about a fortnight, whilst others, such as Wild Ducks and Seagulls, brood double that time. The Puffin is said to sit on her single egg for five weary

weeks, and the Fulmar Petrel for an even longer period.

The majority of birds only have one brood in a season, but, on the other hand, a great many rear two.

CHAPTER IV.

YOUNG: HOW THEY ARE FED AND PROTECTED.

How Chicks of Various Species Differ—Chicks that are Covered with Down and those that are not—The Baby Oyster-Catcher that had a Great Fall The First Week in the Life of a Baby Blackbird—"Me Won't Sit!"—Oyster-Catchers Watching over their Chicks—Wiles of Parent Birds to Decoy Intruders from their Young—Bravery of Birds in Defending their Young—Daring Ducklings—How Parent Birds Work to Support their Families—A Tit-bit for Mother—Young Rooks Learning to Forage for themselves—Wasteful Birds—Times of Plenty—A Welcome Home for Mother and Father—What Young Birds do when they Leave Home—The Cuckoo and its Bad Habits.

THE periods occupied by nest-building and brooding are no doubt happy, hopeful times, but the real joys and cares of a mother bird's life only commence when the young burst forth from their little prison-houses of shell.

The chicks of some species may be distinctly heard cheep-cheep-cheeping before a particle of the shell of the egg in which they lie tucked away is broken. At such times I have watched the sitting parent rise, turn the contents of her nest carefully over, listen for a little while, and sitting down again, look the very happiest thing in all the countryside. And when the young ones have come forth, what a wealth of love and care is lavished upon them! Day in and day out, almost every

thought and action of one or both parents is for the welfare of their offspring, as I hope to show during the course of the present chapter by retailing a few of the interesting things I have seen during my rambles in birdland.

The young of different species vary to an incredible extent when they emerge from the shell, in development, in appearance, and in intelligence. Those of Blackbirds, Thrushes, Sparrows, Larks, and similar birds, have their eyes closed, very little down upon their bodies, and only enough sense to open their mouths in dumb appeal for food, and they remain in their nests from a week to a fortnight after they are hatched. On the other hand, baby Plovers, Sandpipers, and Curlews arrive open-eyed, with a thick coat of down all over their bodies, leave the nest directly they are hatched, and possess such an instinctive knowledge of the world and its ways that, even an hour after they have first seen the light of day, if a Hawk passes overhead they crouch flat and trust to escaping discovery and destruction by means of the varying tints of the upper parts of their dress corresponding with their natural surroundings. Our illustrations on the next two pages show how well this harmonisation of colour can protect a tiny Peewit crouching flat in a field. Three yards away it is almost impossible to see the creature until it stands up and commences to move about.

Common Curlews breed in great numbers on the

moors, pastures, and even meadows in some parts of the North of England. The chicks of the birds nesting in the two first-named situations easily hide amongst the brown, half-dead grass, with which they harmonise very closely indeed; but those inhabiting the fields where the herbage is short and beautifully green are not so well off for cover. The baby chick figured in the illustration on page 96 was met with in a meadow, and photographed whilst standing on a stone, where it looked very plain and conspicuous against a light-green background. It is not long, however, before young birds living in such places learn an effectual method of hiding. Whilst watching one in a little meadow one day and wondering at the tremendous fuss its parents made about its safety, I saw it run into a corner formed by two old stone walls meeting

PEEWIT STANDING (*p.* 93).

each other at right angles, and suddenly missed it. Upon a nearer approach, I was astonished to find that it had plastered itself up against the stones so cleverly, and harmonised so closely in coloration with them, that it was difficult to detect only a few paces away. Although supporting its weight on one leg only, it never moved a muscle whilst its portrait was being taken (*see* page 97) in its wonderful hiding-place.

PEEWIT CROUCHING (*p.* 93).

The young of all species that run or swim about directly they are hatched are well supplied with a warm coat of down, and so also are those of Eagles, Falcons, and Owls, although they remain in their eyries for a long while on account of slow development. On the other hand, young Cormorants and Shags emerge from the shell without a particle of down upon them, and their little black, shiny

bodies render them strangely suggestive of winged niggers.

A good covering of down serves other purposes sometimes besides keeping its wearer warm and protecting it from discovery by matching in coloration with natural surroundings: it acts the part of

BABY CURLEW *p.* 94.

a useful buffer in the case of an accidental fall. On one occasion I saw a baby Oyster Catcher fall off a ledge ten feet in height and jump up and run away as if nothing whatever had happened directly it reached the rough stones below. The little creature could not have stood more than three inches in height, and yet fell one hundred and

YOUNG CURLEW HIDING (*p.* 94).

twenty inches. I wondered what would have happened to a child standing three feet in height after falling one hundred and twenty feet and striking nothing but hard rocks.

The chicks of some species grow very rapidly, as will be seen from the accompanying series of illustrations representing the first week of the life of a baby Blackbird.

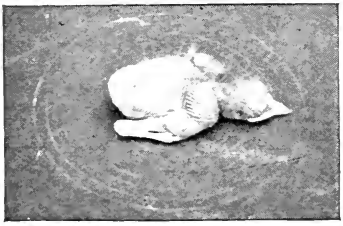
The egg in the first picture on the next page was photographed on the morning of the 9th of May, and the chick, which was carefully marked, at ten o'clock every morning from the 10th to the 16th of the month, when it and its brothers and sisters were slain by a cat, to my great grief. The camera was most carefully fixed on wooden pegs driven into the ground, and the distance from the lens to a dot in the centre of the black board on which the chick rested was measured every time a plate was exposed, so as to ensure absolute accuracy.

On the morning of the 10th, 11th, and 12th the little fellow lay quite still whilst having his portrait taken; but on the 13th he began to struggle, and on the following day his eyes were partly open. On the 15th his eyes were a bit more widely opened and his feathers shooting quite nicely. He grew very uneasy, and before the plate was exposed upon him began to kick, struggle, and roll about and tell us in the plainest of bird language, "Me won't sit!" On the 16th—his last day of facing the camera troubles, poor little chap!—he made very

May 9.

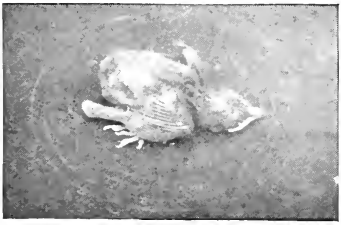
May 13.

May 10.



May 14.

May 11.



May 15.

May 12.

May 16.

THE FIRST WEEK IN A BABY BLACKBIRD'S LIFE.

free use both of his legs and his wings, the latter of which he used like oars, and said some very nasty things about natural history photographers. It will be noticed that the last two days of his brief life made a great difference in the length of his wing quills. A strange thing about him was that only a few hours after he had left the shell he could sit straight up on end, like a ginger-beer bottle, in the palm of my hand and beg for food with his little mouth very widely opened.

As young birds grow and fill the cavity of cup-shaped nests, the mother bird, when covering them during periods of rest from her labours and at night-time, is lifted higher and higher: and it is no uncommon thing to see her sitting in the elevated position depicted in the illustration of a Blackcap on the opposite page, with three or four inquiring heads thrust from beneath her wings and puffed-out breast feathers.

Chicks that have to be left in a nest whilst their parents fly a long way off in search of food are no doubt a source of great anxiety: but so are those that run about with their elders directly they are hatched.

One day, whilst lying hidden in a crevice of rock by the sea, I saw a pair of old Oyster Catchers proudly walking along the strand. By-and-by they approached my place of concealment, and as their behaviour became somewhat strange I gave them particular attention. They kept on running back-

wards and forwards in a state of concern upon the sand and shingle just above the wetted line left by the succeeding waves of a rising tide, and I discovered that they each had a pair of mischievous baby Oyster Catchers in their charge. The youngsters seemed to want to paddle very

FEMALE BLACKCAP SITTING ON NEST FULL OF YOUNG (*p.* 100).

badly, but their parents headed them off every time they approached the water and made them run about where it was quite safe. I must admit that this parental care seemed even to me to be very much overdone, but I soon had a striking lesson to the contrary. A number of tourists landed from a boat which came ashore a hundred yards or so further down the bay, and one of the

old Oyster Catchers rushed off to try to make them believe its nest was on a rocky promontory close by. A few seconds later one of the venturesome chicks thought it could cross a tiny creek of shallow water before an incoming wave had time to catch and overwhelm it. This was a sad mistake; for the rushing flood of water knocked it down and rolled it over and over, and the backwash sucked it away towards deep water. The downy little thing struggled and kicked most gallantly shorewards, but before it had a chance of setting foot on the solid sand the next breaker bowled it over and I lost sight of it in the smother of broken water. The unfortunate creature would have perished to a certainty had I not promptly jumped up and run along and rescued it. These old Oyster Catchers knew the ways of adventurous chicks and tumbling waves far better than I did, and I shall never doubt their wisdom again.

The behaviour of parent birds differs very widely when danger threatens their helpless children. Some species, such as the Red Grouse and Common Partridge, decoy an intruder away from the presence of their offspring by feigning injury. Crouching quite still and silent in the heather or grass, with eyes and ears alert, they allow an enemy to approach very close indeed, in the hope that they may be passed by unseen: but when they judge it unsafe to remain quiet any longer, they suddenly jump up and scuffle along the ground as if quite

unable to fly. No sooner has the startled intruder recovered from his surprise than he gives chase, in the almost certain hope of catching the wounded bird, which flaps and tumbles along a yard or two in front of him. Exactly what the wily creature desires him to do; and as soon as he has been enticed a safe distance away, up she jumps as hale and well as any bird alive, and mounting the air, flies off laughing at her disappointed dupe, who turns round in the vain hope of retracing his steps to the spot from which the winged trickster first started. Even if he succeeded it would be quite useless, for directly the mother bird fluttered away the cunning chicks scattered helter-skelter north, south, east and west, as if they had not the least connection with each other. When the danger has quite passed the parent bird returns to the spot and calls her children up to her. Along they all run as fast as their little feet will carry them, and as soon as the excitement is over and they have congratulated their clever old mother upon the success of her cunning, and she them upon their prompt dispersal, they fall back upon the two great pursuits of their wild lives: looking out for food and enemies.

A few species defend their young by attacking their enemies in the most courageous manner. The Common Skua, which breeds in the Shetland Islands, is one of these birds, and I have repeatedly had my cap dashed off my head by it when

standing near a nest containing newly-hatched young.

Occasionally an Arctic Tern or Sea Swallow will boldly attack an intruder and strike him a stinging blow upon the crown of the head with its bill.

ARCTIC TERN GUARDING HER NEST.

Whilst studying Seafowl in their breeding haunts on the Farne Islands last spring I was attacked by one of these dainty little birds close by the place where the photograph which is reproduced above was obtained, and I must admit that the vigour

and suddenness of her onslaught astonished me. I was wandering along a shingly beach, carefully examining every inch of ground for fear of setting foot on any eggs or chicks belonging to the cloud of white-winged, noisy birds in the air above me, when all of a sudden I received a stinging blow on the top of my head. It felt as if I had been struck by a smartly hurled pebble, and I think its deliverer must have suffered somewhat from the jar of the collision, for she did not renew her attacks with so much force, although she hit me several times during my retreat to escape her fury. I have also been attacked by Lesser Black-Backed Gulls, and even such small birds as the Red-Backed Shrike, in the defence of their young.

The Missel Thrush is a brave bird, and not infrequently perishes in the noble act of trying to protect her children. If a prowling Cat happens to ascend the tree in which her nest is situated, she will dash at it in the boldest manner and pay the penalty of her devotion. Occasionally she will be guilty of the extreme imprudence of attacking a Weasel or Stoat upon the ground near to her breeding quarters; and the unequal contest ends in a harsh scream and a bundle of disordered feathers being dragged away by the four-footed maurauder.

The bird figured in our illustration (p. 109) saw a Screech Owl sitting on a branch close to her nest when she returned with food one day, and

promptly dashed at it and knocked it over. It was a stuffed one I had had given to me, and I put it there to hear what the angry Missel Thrush would say. She soon had her husband by her side, and they and a couple of Blackbirds and a Wren or two said the most dreadful things about Owls and all their kindred that I ever heard in my life.

Owls, in their turn, are not slow to defend their helpless children, and the Tawny species sometimes supplies such fierce examples that ladies and children fear to go anywhere near their quarters after the dusk of evening has fallen. One such bird lived close to a village in the Eastern counties of England not long ago, and went so far as to carry off men's caps, bury its talons in the scalps of innocent wayfarers, and commit other outrages which rendered it such a terror that it had to be shot.

The size of a bird counts for little in a passage of arms, especially in mid-air: for I have seen a plucky little Ringed Dotterel drive a great hulking Seagull away from the neighbourhood of her children—which he would have been very glad to swallow one by one—by rushing up beneath and behind him and pecking vigorously between his legs. The Gull simply tore off for his life, and yelled as he flew in abject terror of his wee assailant.

The Rook sometimes chases the great Heron about and laughs at his cowardice; but the sable gentleman, in his turn, cannot stand the dashing

onslaughts of an enraged mother Peewit. One day, whilst lying hidden at the foot of an old hedgerow, with my field-glasses I saw the funniest bit of bird war I ever witnessed. A mother Peewit had four downy little chicks in a bare grass field on my left, and a pair of Carrion Crows were trying their very best to make a meal off them. Poor Mrs. Peewit! She was in a great state of excitement, charging first one would-be robber and then the other. When she had succeeded in driving them off for a few minutes, she alighted and called her children together just as plainly as if she had said, "Keep close together, bairns: then I can guard you all the better against those great black villains overhead." At last I rose and helped the distressed mother out of her dilemma by pointing my stick at the Crows as if it were a gun and thus frightening them away.

That old mother Peewit was the most sensible bird I ever met. One day, when I visited her particular field, she was busily engaged driving off Rooks. I could not make out for a while why she stood twenty or thirty yards to the left of her chicks, but by-and-by discovered the excellence of her wisdom. A strong wind was blowing from her children towards herself, and numbers of Rooks were busy seeking food for their callow broods in a wood a few hundred yards to her left. The cunning bird knew that her unscrupulous neighbours always flew low against the breeze on their

journey in search of food, so she planted herself in such a position as to be able to drive off any dark snatcher flying in the line of her offspring.

The young of birds of prey have a curious habit of defending themselves by turning over on their backs and striking upwards with their powerful feet. This odd method of warfare sometimes leads to awkward results; for men in want of young Peregrine Falcons, for instance, do not trouble to descend a cliff for them, but lower a bundle of wool on the end of a long rope to the ledge whereon the fierce creatures are sitting. As soon as the wool comes near them they roll over on their backs, and, striking upward viciously, bury their talons deeply in the mass, and being unable to extricate them on account of the hooked character of their strong claws, are drawn up entirely helpless.

Despite all the watchful care and vigilance of mother birds over their broods, thousands upon thousands of promising young members of the feathered world perish every spring.

A Shelduck will bring a family of ten or a dozen beautiful children from a dark tunnel in which they have been hatched and proudly paddle out on to the brown waters of some lonely loch with them. She tries her very best to keep them near her, but all in vain: some venturesome spirit will persist in wandering a little, and sooner or later down swoops a hungry Gull and carries off the

A MISSEL THRUSH AT NEST (*p.* 105)

disobedient duckling for his supper. Even those that keep close by their mother's side are not safe, for they have their enemies in the waters beneath as well as the air above, and fierce Pike thrust up their hungry jaws and ruthlessly drag them down and devour them. This sometimes goes on day after day until the poor distracted mother Sheldnck is left without a single child to love and look after.

Young Eider Ducks and Wild Geese are, according to my observations, much more obedient than baby Wild Ducks. I have seen whole families of the two former species swimming so close under their mothers' tails—where the water was, of course, sheltered and easy to paddle through—that they might almost have been covered by an ordinary pocket-handkerchief. On the other hand, the children of the last named species wander about in such a reckless fashion that I have sometimes wondered, whilst watching them from one of my hiding-places, that they did not drive their unfortunate mother out of her mind.

Water-fowl have a lot of enemies to contend against, and the care of the young in the Duck world devolves upon the mothers. When on land they have to keep a sharp look-out for Foxes, Cats, Stoats, Weasels, and Rats; and when on the water they are obliged to run the gauntlet of hungry fishes; for even Trout weighing under two pounds have been known to try to swallow ducklings and choke themselves in the attempt. It must be a

fearsome thing to be seized from below and dragged under water and drowned between the jaws of a fish: but even this long list of enemies does not include all the dangers which beset the life of a duckling. I have known a whole family of water fowl perish by becoming entangled in the weeds growing at the bottom of a shallow lake, into which they dived to escape an overhead enemy.

Some species, such as the Woodcock, carry their young about from place to place when danger threatens or food grows scarce at a particular spot. They manage it in different ways, according to the testimony of numerous observers, some in their claws, others between their thighs, and so forth. I have only had the good luck to see it done once, in the Island of Mull, when the parent bird appeared to have her chick pressed between her legs and held by the claws and toes of both feet.

Wild Ducks, when nesting on the tops of ricks in old Crows' nests built in high trees, and similar elevated situations, have been seen throwing their young ones down to the ground below, and also carrying them in their bills; and I have no doubt that the greater or lesser height of the nesting-place has much to do with the method of conveyance to what the little boy described as *terrible jirmer*.

Whilst visiting a great colony of Arctic Terns in the Farne Islands, upon one occasion I was surprised to see a member of the species lift up and

attempt to fly away with a young one only a day or two old. Whether it was one of her own chicks or not I was unable to determine, because directly it dropped upon the sand it jumped up and ran off as if nothing whatever had happened, and was soon lost to view in the wandering crowd of its kind.

It sounds strange, I know, to say that some parent birds give their young ones pick-a-backs, but, nevertheless, such is literally the case. I have seen an old Great-Crested Grebe carrying one of its children on its back whilst swimming away across a broad at great speed. The question naturally arises—But how does the chick manage to keep its seat? In the most ingenious manner. It seizes hold of a feather or two with its bill and holds on as if it were handling a pair of reins.

The male members of a few species, such as Pheasants, Eider Ducks, and Wild Ducks go off and leave their mates directly they commence to sit, and take no further notice of household affairs; but the great majority of British birds, at any rate, act quite differently. The male Great-Crested Grebe makes a model father, and takes charge of the young ones as they are hatched, thus leaving his wife quite free to bestow all her attention on the unhatched eggs still remaining in the nest. Father Moorhens and Coots build spare nests or platforms whilst their wives are brooding, in order that their dusky little sons and daughters may

have a dry place to sit on and sun themselves in after getting tired of the water, to which they take, one by one, almost directly they leave the shell.

Where big families prevail, as in the case of the Common Partridge, the male helps the female to cover the chicks. A friend of mine, who is a man with a wide experience, says that the adult birds always sit close together tail to tail when thus engaged. Personally I have only had the good fortune to see such a sight once, and I shall never forget it. The birds were crouching in the middle of a bare patch in a bed of stunted bracken, and I got within three or four yards of them before they saw me. The parent birds were sitting close together, although not quite tail to tail, and seven or eight little heads, with their bonny bright eyes, were thrust inquiringly from beneath the plumage of each. I stared and stared my fill at this unusual sight, and then slowly withdrew without disturbing the happy family.

The male members of some species will, in addition to assisting to look after fledgelings, sit upon the nest and help to keep the callow brood warm and dry during the absence of their mates: and I have seen a Blackbird exchange the proud occupation of piping mellow notes on the topmost branch of a tall ash-tree for this kind of feminine duty.

The question of finding an adequate supply of suitable food for a large family of hungry chicks

IN DREAMLAND (*p.* 119).

is a very trying one for many kinds of birds during dry, cold springs. Both male and female work as hard as they can from early morn till dewy eve, and still the cry is, "More, please!" Young Rooks sometimes suffer a considerable amount of privation before they leave the nest, on account of droughty weather cutting short their supply of natural food: and at such times their parents will assume the habits of Carrion Crows, and steal the eggs and callow young of other species for a meal.

When I was a boy I often used to wonder how birds managed to feed their broods without favouring one individual chick more than another. It puzzled me greatly to know, for instance, if the father of a family remembered whether he gave the grub to Dicky or Billy when he visited the nest last, and how he knew he was not giving it to Polly or Sally whom his wife had just fed.

I have since those juvenile speculations watched many, many birds feed their young, and have come to the conclusion that they never even try to remember which chick they fed last, but simply drop their gleanings into the mouth of the strongest and most energetic child until it is satisfied and retires to the bottom or back of the nest and gives its weaker brothers and sisters a chance.

Parent birds coming home with a good haul of worms or grubs will sometimes divide their catch by dropping one into this and one into that widely-opened mouth, until the supply is exhausted.

Not long ago I had an opportunity of watching a mother Lark feed her small family of two children, and saw her do some interesting things. She brought them small caterpillars and

"WHO SAID MICE?"

moths on an average five times an hour, her shortest absence being five minutes, and her longest thirty. She divided her catch very impartially every two visits out of three: and when I laid a dead humble bee beside the nest she promptly removed it to a safe distance. Whilst she was standing watching her chicks it was a bad day for any blue-bottle or other fly that came near, for she at once dashed after it. Another Lark tried hard to get a peep at her children, but she drove the inquisitive intruder off in a great outburst of fury. One morning a heavy thunderstorm crept up, and as I was not likely to get very wet in my artificial rubbish-heap fixed within three feet of the birds' home, I stayed to see what she would do to protect her offspring from a wetting. Directly the rain commenced to fall she hastened back, disposed of her catch of caterpillars, and sitting down upon the nest with wings spread out a little and head to windward she prepared to face the coming storm. The lightning flashed, and the thunder rattled and thumped, but she never once moved a muscle. By-and-by the rain increased to a perfect deluge, but she took not the slightest notice of it beyond closing her eyes and sipping in the water which ran down her bill. When the storm was over she flew away, looking like a drowned rat. The sun immediately shone out again bright and hot, and, to my surprise, the brave bird was back again in fifteen minutes by my watch with a fresh supply

of food, and every feather on her body as dry, for aught I could see, as before the rain descended.

A strange thing about a great many birds is that when the male and female are bringing food to their chicks, if they both happen to meet at the nest with a supply, one or both of them will commence to quiver their wings, just as if they were expectant fledgelings themselves.

It is very amusing to watch Rooks feeding their young in the early spring. Not long ago I had a pair under observation for a whole day, and sometimes the fun was as good as a pantomime. The old mother Rook sat tight upon the nest until her husband came along with a supply of food, when she stood up on the edge and watched him feed their chicks, caw-cawing, shaking her wings, and asking in the plainest of bird language for a tit-bit. Her husband hopped sedately away a few feet, and she followed him in quivering expectation, all the time saying the very sweetest things about him until he gave her a nice piece which he had saved at the back of his commodious mouth. Then they sat still for a few seconds, looking very grave and thoughtful, the female generally breaking the reverie by fondling round her companion's bill and uttering a long-drawn *Caaa*, which seemed to say, "Did you find grubs very hard to get this morning, dear?" and he answered with a short, sharp *Ka*, which doubtless meant "Yes," for the weather was dry and cold.

Occasionally the male Rook took a turn upon the nest, whilst his wife flew away on a food-hunting expedition.

If a brood of young Rooks should enjoy the good fortune to escape the gunner on pie-making intent, and get away to the fields with their parents, they are instructed in the gentle art of finding and extracting the larvæ of all sorts of flies, drawing obstinate worms from their hiding-places without breaking them, and other items of field craft. One day I watched a brood of four so engaged. They observed their mother very closely, and whenever she made a find they all crowded very closely round her, shaking their drooping wings and *Ka, Ka, Ka*-ing their "Me first, mother, please!" as loudly as ever they could. By-and-by they tried to help her, but soon got tired and disappointed, so sat in a bunch and talked over old times when they lived in a nest.

After a while old mother Rook thought they had better shift to the other side of the field, where there were not so many friends and neighbours on the same quest as themselves; so she called her children, and away they all flew. Upon alighting, one of her sons had the great good fortune to espy a fine fat worm wriggling out of his tunnel by the end of a drain. He was upon it in a tick, swallowed it, and then retired to the topmost rail of an old wooden fence to wipe his beak and congratulate himself.

Birds of prey are very hard upon their feathered neighbours during the breeding season, when they have a number of hungry mouths to fill.

The parents of the young Tawny Owl figured on pages 114 and 115 and a pair of Carrion

MERLIN'S NEST, WITH NEWLY-HATCHED CHICK (*p.* 121).

Crows lived close together in a glen, and used to work unconsciously to each other's advantage. The former killed small birds as they sat brooding on their nests by night, and the latter carried off the eggs of the unfortunate victims by day. When Mrs. Crow could not meet with an

adequate supply of wild birds' eggs, she used to visit a farmer's Fowl-house and take away Hens' eggs, and even the Indian corn upon which the birds were fed. I saw her leave the Fowl-house one day and found the maize at her nest, which I discovered whilst wandering about in a little hill-side wood not far away. It was in a rather awkward tree to climb, so I thought I would try to find out what it contained by a little trick. I croaked like a Crow, and at the very first call four black heads shot up and four great mouths opened horribly wide. Later on I climbed the tree in order to make a closer inspection of the sable family: but upon my approach the chicks all took wing, save one, which had its portrait taken and was kept for some days by a cousin of ours as a pet. It soon began to understand things, and swallowed worms, young frogs, minnows, and so forth with equal relish and good results so far as its bodily health was concerned.

The different methods adopted by birds of various species in feeding their young are very interesting.

The Osprey plunges like an arrow from the clouds into the dark depths of a mountain loch, and seizing a large trout, brings it along in its talons and, standing on the edge of its eyrie, tears pieces off and drops them into the widely-opened mouths of its chicks, even when they have grown quite large: but the Golden Eagle appears to allow

its offspring to tear pieces of prey for themselves—at any rate, after a certain age—because I have watched Eaglets sit up in their own comical way and tear off pieces from Mountain Hares—a form of diet with which their fierce parents kept them most liberally supplied.

Tawny Owls appear to lay in a good stock of food, from which their children may take a few bites whenever they feel so disposed. I have found the hind quarters of a half-grown rabbit, part of a mole, young Peewit, adult Barn Swallow, Ring Ouzel, and Missel Thrush lying round the young of this species on the loft of an old barn in Westmorland: but I do not think that the Screech or Barn Owl provides such liberal fare for its olive branches, although it, too, is a very hard-working bird.

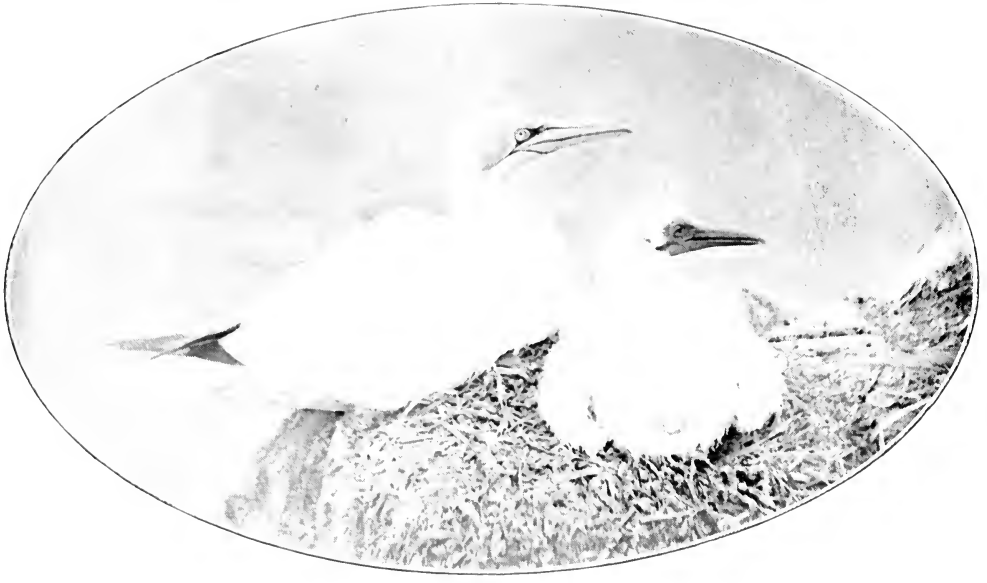
Some people think that Owls only come forth at night in search of prey. Nothing could be further from the fact, for Screech Owls may often be seen at five or six o'clock on a dull summer's evening diligently quartering hedge-sides in search of mice wherewith to supply the wants of a family of four or five hungry young ones.

Merlin Hawks breed upon the ground, as will be seen from our illustration (p. 119) of a nest containing three eggs and a newly-hatched chick. They feed their offspring upon young Grouse, Snipe, and small birds of different species, which they are very careful not to pluck and prepare anywhere near their homes, for fear the gamekeeper should see tell-tale

feathers scattered about on the heather and thereby find and destroy their family of white fluffy bairns.

Sea-birds generally keep the best of tables, and when the young are out a large colony of Cormorants is hardly approachable for the smell of fish in all stages of decay. The waste of good food is simply wicked, and I have seen beautiful Eels and Sand Dabs lying about quite neglected, save when a cunning old Lesser Black-Backed Gull took advantage of the absence of the adult Cormorants and snatched up whatever unconsidered trifle he could find.

Gannets, too, feed their single youngsters on the most liberal scale, as may be seen from the fat, podgy fellow sitting by his mother in the illustration opposite. I am sure that young Gannets, or Solan Geese, as they are otherwise known, ought to grow up obedient and dutiful children: for they enjoy the love and protection of the most considerate and devoted mothers in the bird world. I have walked from ledge to ledge of a Gannet colony on the top of a dizzying ocean cliff when the old birds were sitting on their nests guarding their young and pecking vigorously at my legs with their great strong bills, as much as to say, "You be off! We are not going to desert our babies for anything or anybody." Of course, I admired the brave birds, and readily forgave their attacks on my legs.



GANNET AND YOUNG (*p.* 122).

The most comical sight of all sea-bird life, I think, is to see an old Puffin with its mask-like beak stuck full from end to end of small fish as it enters its nesting burrow to feed the single youngster sitting in the dark at the end of it. The little fishes are held by the middle, and their heads dangle down one side and their tails down the other of the under mandible of their grotesque-looking captor.

Terns of different species feed their chicks on Sand Eels and the fry of surface-swimming sea fishes, and it has always been a puzzle to me to know how they distinguish their young ones from those of their neighbours in a big colony where they run about like a flock of miniature sheep.

Insect-eating birds with large families are compelled to work terribly hard in order to keep the wolf from the door.

During the dry windy weather which prevailed last May I had under observation a pair of Starlings feeding their young under the roof of a friend's stable in Norfolk. Between seven and eight o'clock in the morning the birds, between them, brought food twenty times an hour; but at a corresponding period in the evening, when grubs were no doubt scarcer and the energies of the seekers somewhat diminished from prolonged exertion, they only entered their home at the rate of twelve times an hour. These birds had a pair of neighbours just as hard at work feeding a large

family under the same roof, so I timed their efforts and found no appreciable difference in their performances at either end of the day. Whilst I was watching, however, I saw two curious things. A stray Starling waited his opportunity and then examined both nests, one after the other, during the absence of the parent birds. Whether he was an inspector of schools or not I do not know; but after having a violent altercation with a pair of House Sparrows into whose nesting-hole he unsuccessfully tried to force his way, he flew off. The other strange thing I saw was a Barn Swallow running about on the ground like a Wagtail, only not half so nimbly, and feeding upon flies that had settled in the snug shelter of a thick row of pea-sticks close beside where I was sitting.

Sometimes parent birds find food for their young ones very easily indeed. About the middle of June I was staying at a lonely farmhouse away up a little dale in the North of England. The May Fly happened to be "on," as anglers term it, and every rock and stone wall by the beck was covered. As there were very few Trout indeed about, owing to the depredations of Herons and Otters, the birds had a most enjoyable time of it; and I watched a pair of Wheatears enter their nesting-hole in a rocky bank no less than forty-two times in an hour with bundles of May Flies, which they often did not travel more than a score of yards away to catch. In a day or two the glut of these insects had

passed; and when the Wheatears were driven back upon Beetles and Caterpillars, their visits with food fell by nearly half.

A pair of Redstarts nesting in a hole in a bank close by never exceeded twenty-four excursions with food per hour, and the female made two journeys to the male's one. They commenced their labours at a quarter to four in the morning, and kept them up until nine o'clock at night.

On another occasion I watched the parents of a brood of seven or eight young Blue Tits feed their offspring for the best part of a day, and their industry simply astonished me. In the afternoon, the birds entered the hollow tree, in which they had their family, with food no less than six times in the space of five minutes—that is, of course, counting the journeys of both the father and mother. They generally had two or more small green caterpillars in their bills each time they came along. This was in June, when birds are able to, and as a matter of fact do, work sixteen or seventeen hours a day, and after making all allowances for rest, their own meals, and occasional rather lengthy journeys and searches after prey, we may safely conclude that the two birds destroyed a thousand caterpillars a day.

The parents of the pair of baby Crested Tits figured on the opposite page were most industrious in their search after food wherewith to supply the wants of these and other feathered bairns. I have

watched adult Crested Tits at work searching for food in some of the great forests in the Highlands

YOUNG CRESTED TITS.

of Scotland, and wondered how any insect could escape their sharp eyes.

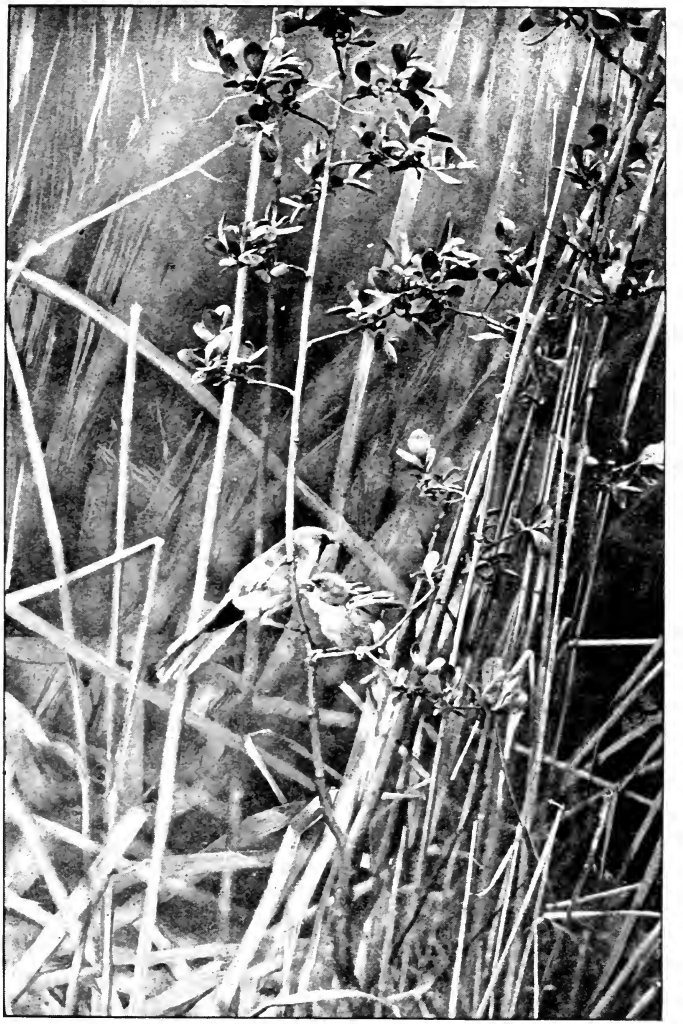
The male Bearded Tit, or Reed Pheasant—a very pretty bird found breeding on the Norfolk

Broads—makes a most dutiful husband and father. He helps his wife to incubate the eggs, and when the chicks come forth he works like a slave all day long to find them an adequate supply of food. I have seen him feed his young two or three times to his wife's once; and the rather rude mouthful which the chick in our illustration (p. 129) has been caught by the camera endeavouring to swallow, testifies to the fact that he believes in liberal supplies.

Kittiwake Gulls are the most gentle and sedate of all sea-birds. They will stand on the edge of the nest, as depicted on p. 131, for hours together, quietly guarding their young, which in some cases they hardly ever appear to leave whilst there is even the suspicion of an enemy about.

When dwellers in nests, such as Starlings, Blackbirds, Larks and Robins, have grown large and opened their eyes, they sit on the edges of their little homes and watch for the return of their parents with food; and as soon as ever they see or hear them coming they give a welcome chirrup by way of salute. It is about this time that chicks living in open-topped nests begin to exercise their wings and pass remarks to each other about things in general. One will stand up on tiptoe and flap his rapidly-growing wings as hard as ever he can make them go, whilst the rest of the family look on in evident admiration, and think of the time when they will all have dominion over the air.

Some venturesome chicks try to enforce the

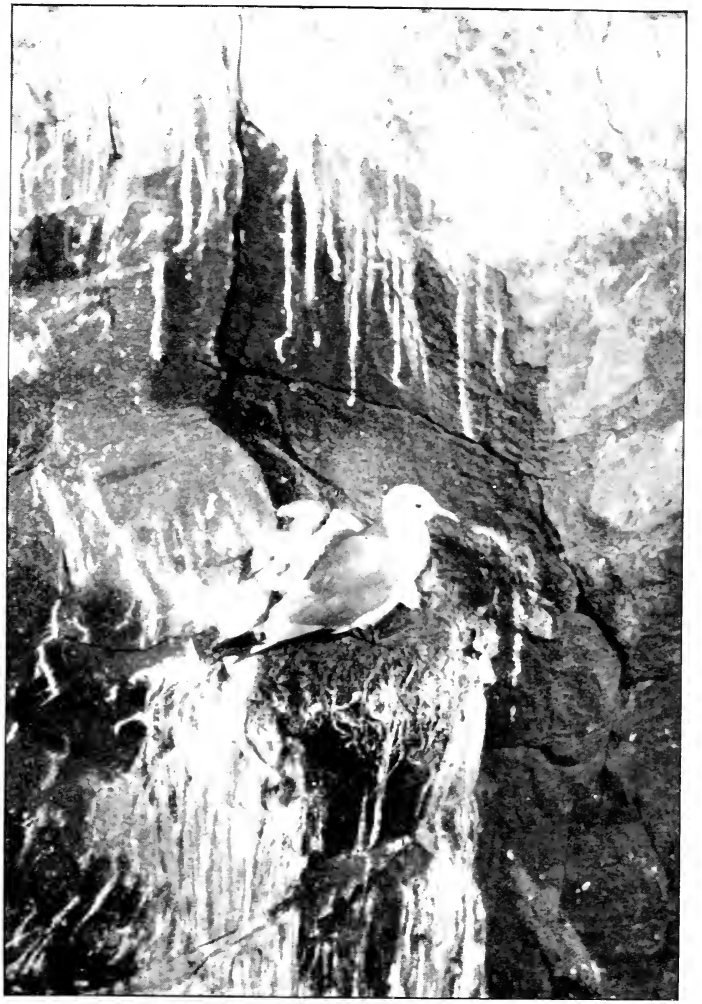


MALE BEARDED TIT FEEDING YOUNG (*p.* 128).

coming of this happy time by leaving the nest far too soon, and, alas! often pay for their impatience with their lives.

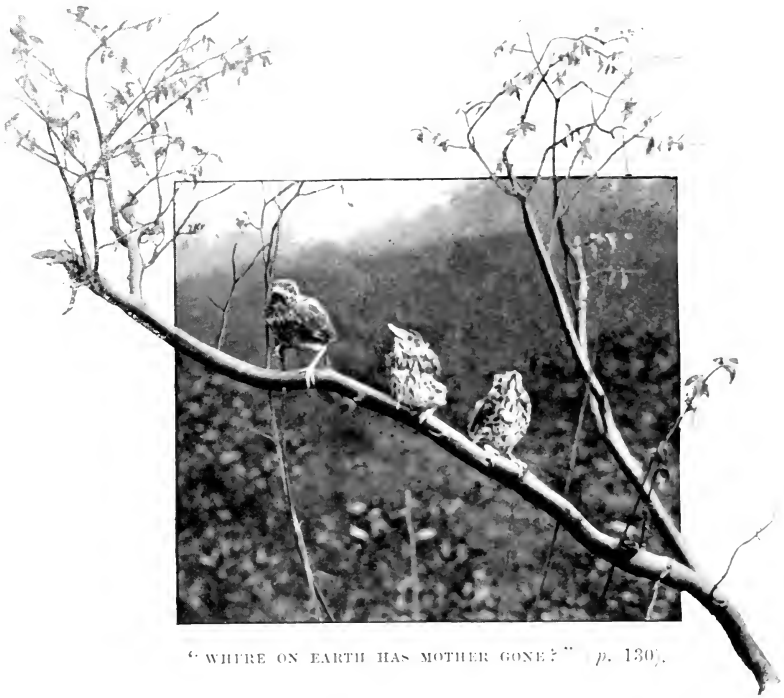
Not long ago I was wandering alongside an old hedgerow when I heard a faint, distressed sort of cry coming from a bunch of nettles, and, upon looking closer, found a young Song Thrush in a very weak state. It could not fly a bit, and I imagined it must belong to a nest not far away. There was a tuft of ivy on the top of an old stump some fifteen or twenty feet above, so up I went, with the youthful traveller in my jacket pocket. Sure enough, there was a Thrush's nest with two young ones about the same size as my friend in it; so I quietly popped him in between them, and slid down the stump. Just as I got to the bottom, I espied another adventurer holding with both his wings on to some little twigs sprouting out below where the nest was situated, whilst his legs dangled down at full length. Up I went again, post-haste, but regret to say I was too late: the venturesome chick was dead and cold. Happening to pass the place a day or two afterwards with my brother, I was telling him about the tragedy, when he remarked, "Why, there they are sitting," and promptly turned his camera upon the surviving trio and photographed them, as shown in our illustration (p. 132).

The question as to the age at which young birds reared in nests commence to feed themselves



KITTIWAKE AND YOUNG (*p.* 128).

in a wild state is an interesting one, and offers a wide field for young observers to exercise their talents in. I have watched both young Larks and



"WHERE ON EARTH HAS MOTHER GONE?" (*p.* 130).

Pipits trying to catch flies passing close to their nests even two or three days before they fledged, and from the movements of youthful House Martins watching for the return of their parents with food, I have no doubt that they, too, do the same thing.

Another question of interest in regard to young birds is as to what becomes of them once they have left the nest and taken to the fields and hedgerows to be taught how to find their own living. Those of Starlings flock at once, by one brood joining another, until there is a great noisy crowd that sticks together, more or less, until the following spring, when it is again broken up into breeding pairs and scattered all over the country.

Double-brooded birds, such as Thrushes, Blackbirds, Sparrows, and Robins, gradually allow their first families to go their own way as soon as they can provide for themselves, and then turn their thoughts to a fresh start in housekeeping.

Waterhens rear two or more broods during a season, and it is said that the members of the first family help their father and mother to build their second nest and nurse the younger generation of children.

The Long-tailed or Bottle Tit is a bird with very strong family ties, and the father and mother, sisters and brothers, all keep together during the summer, autumn, and winter after they are hatched, flying from tree to tree in search of food, and calling to each other until the warm days of spring, when little birds' fancies "lightly turn to thoughts of love," and a new season of pairing and nest-building commences.

I have mentioned a few instances of birds of one species dropping their eggs into nests belonging to the members of other species, and it naturally follows that foster-parents must sometimes occur as a result. A covey of Partridges is occasionally met with containing one or two abnormally large chicks which will, in all probability, turn out to be young Pheasants.

The Cuckoo, of course, makes foster-parents of a great number of small birds which it victimises by placing its egg in their nests. A very strange thing about the young Cuckoo is that during the first few days of its life it has a slight hollow or depression in its back which appears to have been specially provided by Nature in order to help it to eject the young or eggs belonging to the bird in the nest of which the intruder finds itself, and it never rests until it remains in undisputed possession of the stolen home. The astonishing part of the whole thing is that the parent birds of the ejected chicks do not resent the intrusion of the hungry robber and murderer who has thrown their helpless children out of doors to starve and die in the gutter, as it were. Instead of leaving him to his well-merited fate, they work like galley-slaves to provide him with food, and, should any accident befall the usurper, show just as much anxiety as if he had been one of their own flesh and blood. I once saw an inexperienced gunner shoot a fully-fledged Cuckoo in mistake for a Hawk, and its foster-

mother showed the most touching signs of distress, alighting close by the dead bird and uttering all sorts of entreaties to it to get up and fly away to a safer place.

A BABY JACKDAW'S FIRST PEEP INTO THE WORLD.

CHAPTER V.

THE WONDERS OF FEATHERS AND FLIGHT.

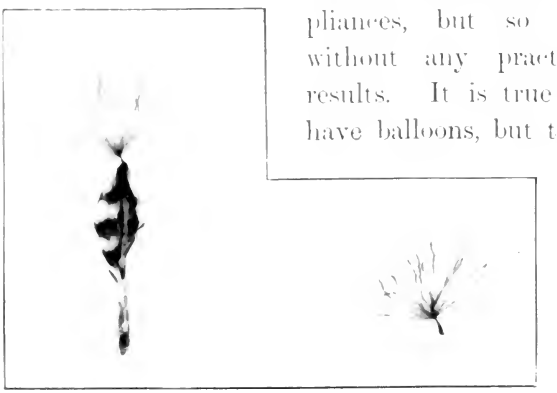
Man's Attempts to Fly—A Feather under the Microscope—Stages of Growth—Feathers of a Common Curlew—How Feathers are Adapted to the Habits of Birds—Why the Gannet is not Harmed when it Falls upon Water—Tail Feathers: Effects of Use and Disuse—Difference between an Owl's and a Wood Pigeon's Feathers—The Trouble Birds take with their Feathers—Moulting, Complete and Partial—A Thing that is Best Done when Half Done—Birds that Wear Stockings in Winter—Shape of Flight Feathers—Shapes and Sizes of Wings—Rates at which Different Species Beat their Wings—How Birds use the Wind to Fly Upwards—Shapes their Wings Assume in Flight—How they Alight—The Tail Feathers—Noises Made by Wings—Wonders of Bird Migration.

Of all the faculties possessed by the wild creatures of the earth, none has ever been envied half so much by man as a bird's power of flight. Even the Psalmist of old sighed after "the wings of a dove," in order that he might fly away to more peaceful realms, and since his day millions of human hearts have longed madly for the same swift and pleasant means of transport from place to place.

I have asked lots of boys and girls what they would like to be supposing they were not human beings, and nearly all of them answer "A bird." And when I inquire "Why?" they say, "So that I

could fly"; and there is every reason to suppose that it would be an exceedingly nice and useful accomplishment. I am a great hand at dreaming. In fact, I have dreamed every night in my life since I can remember anything, and have often, during my slumbering fancies, been gifted with the powers of flight. The sensation of gliding over church steeples and tree-tops and away through airy space a thousandfold swifter and easier than one's enraged enemies in hopeless pursuit upon the ground far below, is, indeed, a grand dreamland experience, and makes one sorry to wake up and find it is not true after all.

The question of flight has occupied the thoughts of scientific men throughout all the ages, and many brave souls have perished in their attempts to imitate the progress of birds through the air by means of artificial appliances, but so far without any practical results. It is true we have balloons, but they



PROPER FEATHER AND DOWN OF YOUNG CHICK (*p.* 141).

are floating rather than flying machines; they are maintained simply by imprisoned gas, and have no propulsive energy whatever. Even soaring contrivances on the principle of a boy's kite have proved highly difficult and dangerous to those courageous enough to entrust their lives to them at any elevation.

Of the three elements, earth, water, and air, the last is obviously the most difficult travelling medium. A locomotive engine rests on rails laid upon the surface of the earth, and a tug-boat floats on the water, and both are driven forward by the power of steam: but in the case of flight, power is needed to lift the machine off the ground and maintain it in space as well as to drive it onward in any desired direction. A little consideration of this very important fact will convince anyone that the flight of a bird is indeed a wonderful performance.

It has been well said that a bird's wing is much harder to understand than a railway engine or a watch, and some of the greatest thinkers of modern times have described it as "a highly complex apparatus," and "an exquisite and complicated structure."

Feathers and flight cover a field sufficiently wide to furnish interesting matter for a whole volume, and it is therefore obvious that I can only describe and illustrate a few such wonders as I think will be calculated to set my readers observing and thinking for themselves.

First of all, it is necessary to state that feathers are composed of the same material as hairs and nails. They vary greatly in size, shape, texture, and strength, according to the portion of the body

YOUNG CHAFFINCH (*p.* 141).

upon which they grow and the life and habits of their wearers.

A flight-feather taken from either the wing or tail of a bird and studied under a moderately powerful microscope shows how ingeniously it has been constructed so as not to allow the air to slip through it. It consists of a central shaft, or quill, from either side of which shoot out flattened branches, or barbs. These branches, in turn, throw out much

finer ones of their own called barbules, or, in other words, miniature barbs, ending in hooklets and other hairlike growths of extreme delicacy, which interlock themselves with similar growths from barbules to right and left of them in such a way as to hold the vane, as the parts on either side of a quill or shaft are called, firmly together. A certain amount of movement being necessary to give free play to the flexible barbules and barbs, the hooklets slide to some extent up and down in grooves, thus adding to the much-needed elasticity of the feather.

YOUNG COMMON GULLS *p.* 141.

It has been calculated by an eminent scientific authority that the flight feather of an Eagle contains two thousand barbs, five and a half million barbules, and no less than fifty-four millions of hooklets and other hairlike growths, which are so very tiny that they only measure about one-thousandth part of an inch in length.

Chicks are first of all supplied with a coat of

soft down feathers similar to the small one shown on page 137. These are really only the temporary tips of proper feathers which are growing directly beneath them, and which, as they mature, push the down feathers upwards and further and further away from the skin of the chick. The same picture shows a proper feather, with its surmounting down still adhering to its tip, and the young Chaffinch on page 139 illustrates the grotesque effect caused by this peculiar continuity of growth. The down feathers gradually wear off the tips of the proper ones, never to appear again. Chicks in down, and also in their first dress of feathers, are often clothed for concealment. Young Common Gulls, whilst sitting quite still, look like little patches of chequered sunshine, and a baby Robin with its brown instead of scarlet breast is not nearly so easy to see in a hedgerow as its parents. A curious thing about the first coat of proper feathers is that in some species they differ in shape from those that follow them.

YOUNG ROBIN.

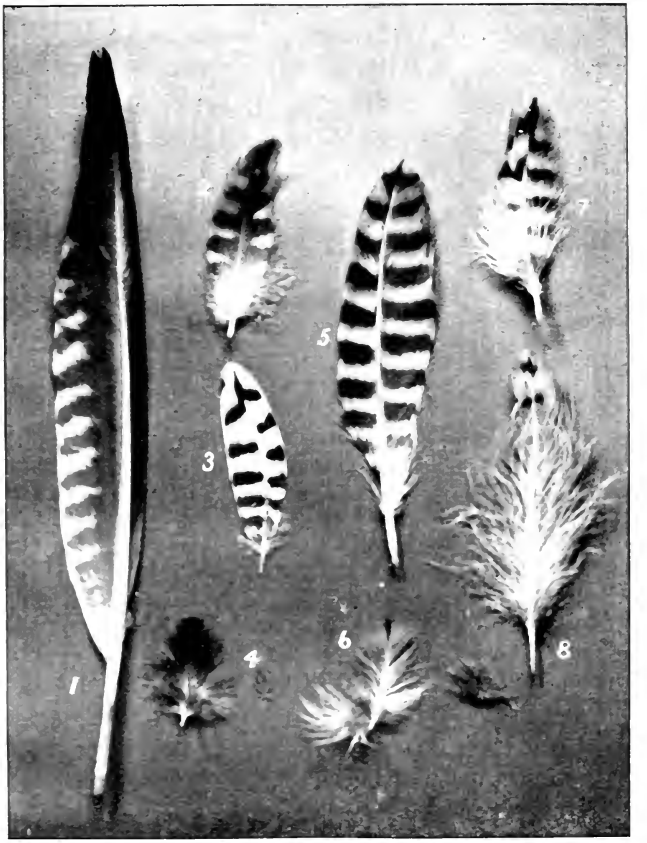
The breast feathers of young Red Grouse are pointed, whereas those of adult birds are rounded.

When a feather is young and growing, the quill is filled with blood wherewith it is nourished and strengthened: but as maturity approaches, the quill becomes dry and hollow and the completed feather a much "deader" thing than a human hair. It is deader because it has not the power to regrow any part cut off, but is not quite lifeless because it retains power to change colour, not by the loss of anything, but by the addition of a tint.

In order to show the different characteristics of birds' feathers, I have thought it well to have the principal ones from the body of a Common Curlew photographed (p. 143). Fig. 1 represents a wing quill, or flight feather: Fig. 2, an outer or upper wing covert: Fig. 3, an under wing covert: Fig. 4, a feather from the middle of the bird's back: Fig. 5, a tail quill: Fig. 6, an under-part feather and its after-shaft: Fig. 7, an upper tail covert: Fig. 8, an under tail covert.

The feathers on the upper parts of birds are stronger, closer and darker in colour, as a rule, than those growing on their under parts: but, curiously enough, this rule is reversed in regard to the downy feathers underlying the proper ones in the case of the Curlew, the down being darker and thicker on the under parts than upon the upper. Nearly all feathers have soft, downy barbs or branches, without hooklets, near the bottom of the

shaft, and those growing upon the body throw out downy after-shafts which vary greatly in length



CURLEW'S FEATHER *p.* 142.

and character in different species. In the Curlew they are short and tufty, and, like the feathers from which they spring, not very strong or numerous,

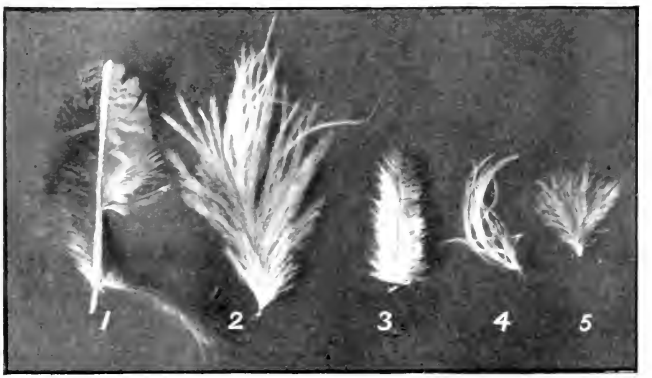
but round about them is a thick warm crop of down feathers springing direct from the skin. On the other hand, in the case of the Grouse, the body feathers of which are long, strong, and numerous, the after-shafts are long and thickly clothed with down, very little of which grows in independent tufts direct from the skin, as in the case of the previously-mentioned species. This shows that the bodies of birds of varying habits are kept warm and dry by different methods.

Feathers are long or short, strong or weak, according to the part of the body upon which they grow, and the uses to which their wearers put them. The soft, plume-like one from the under part of a Heron would never do to fly with, for it would let the air slip through it, and its owner would be very much in the position of a boatman trying to sail his craft with a fishing-net instead of a sheet of canvas.

The Gannet, or Solan Goose, gets its living by flying along at some height over the surface of the sea, and, directly it espies a suitable fish to prey upon swimming near the surface of the water below, down it plunges headlong and disappears in a seething patch of white foam churned up by its impact with the water. The shock produced by such a heavy bird suddenly striking the surface of the ocean after descending from a considerable height at great velocity would kill some species of similar size on the spot. But the Gannet has been

properly equipped for its task. The shafts and vanes of its breast feathers have been tremendously strengthened, and their quills are buried in a quarter-inch-thick pad of very close-set down, which acts like a buffer when its wearer strikes the surface of the sea.

The Heron also is a large fish-feeding bird, but catches its prey in an entirely different manner. It stands in some shallow pool and patiently waits until a fish swims within striking distance of its long neck and spear-like bill, and then, by a sudden dart, transfixes its victim. This kind of work calls for no special development of breast feathers, and they are, in consequence, mere straggling plumes,

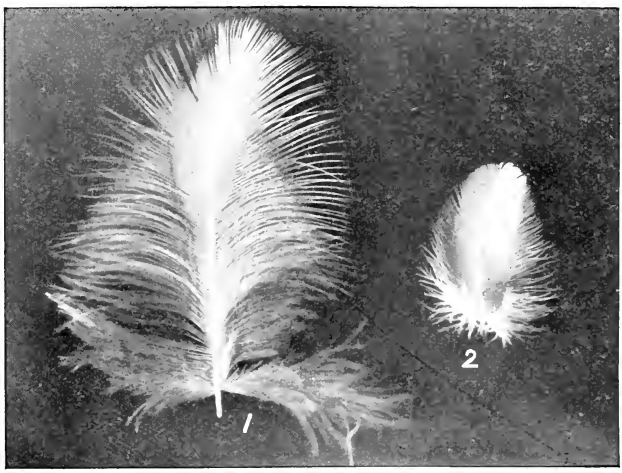


AFTER-SHAFT FEATHERS OF VARIOUS BIRDS.

1, Feather of Partridge, showing how After-shaft is attached; 2 After-shaft of Heron; 3, After-shaft of Grouse; 4, After-shaft of Grey Crow; 5, After-shaft of Curlew.

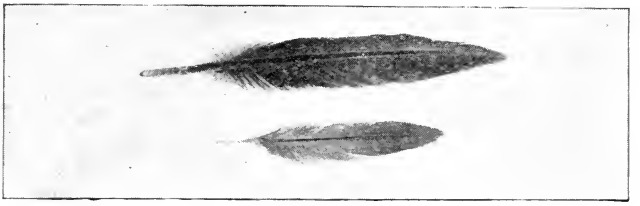
with their quills hidden in a sparse bed of very soft down. The striking difference in the character of the breast feathers of the two species is well shown in the illustration below.

Use and disuse have also had a wonderful effect



BREAST FEATHERS (1) OF HERON, (2) OF GANNET.

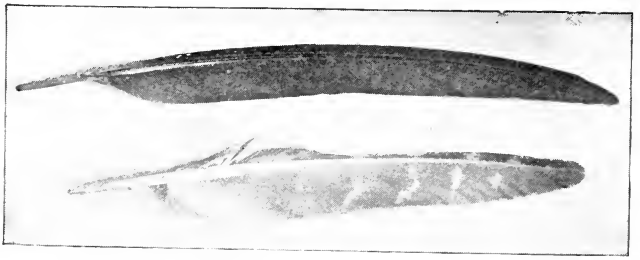
in the development of tail feathers. The larger of the two in the illustration on the top of the opposite page represents one of the principal tail quills of a Greater Spotted Woodpecker. It has a very powerful shaft, and the barbs at and near the tip are almost as strong as bristles — just the kind of feather to push down into the cracks and crevices of the bark of some old tree and help



TAIL QUILL (1) OF GREATER SPOTTED WOODPECKER AND (2) OF CORNCRAKE.

to prop its owner up whilst clinging to the trunk with both feet and hammering away after some insect buried in the wood. The smaller feather is one of the tail quills of a Corncrake, a bird that lives amongst tall grass, iris beds, corn and other crops, and only flies when obliged to do so during its migratory trips, or when hunted by its enemies.

A bird like the common Partridge has not far to travel for its food, and is a most excellent runner, therefore it does not need long and powerful flight feathers as in the case of the Swift, which has to find and capture every particle of its food on the



FLIGHT FEATHER (1) OF SWIFT, (2) OF PARTRIDGE.

wing. The short, concave feather of the former, and the long, narrow, sword-like one of the other (see page 147), afford a most striking lesson of how Nature fits out her children for the kind of life they have to lead.

Owls generally feed by night, and it is necessary for them to steal noiselessly upon their prey. How well they are able to accomplish this, I once had a good opportunity of proving. I was standing in an old cart-shed one moonlit winter's night, when I saw a Screech Owl sail round a corn-stack and fly straight towards me. I stood perfectly still, and being in deep shadow the bird could not see me, and passing close over my head alighted on a beam behind me without making the slightest sound until its claws tapped upon the hard oak beam on which it alighted. Its feathers are very broad, peculiarly soft, and clothed with very fine, downy hair, which renders their flight inaudible. On the other hand, the flight feathers of the Wood Pigeon are somewhat narrow, and so very hard that every stroke of the bird's wings can be heard cutting the air at a considerable distance on a calm day; and when their owner chooses to make them meet over its back, they can be heard smack-smack-smacking like a pair of hard bits of board being brought smartly together.

Feathers do not grow in an irregular, haphazard way on the body of a bird, but are set along definite tracts, the arrangement of which varies in different

species, and is best in those that fly much. They serve a variety of useful purposes. By entangling the air they reduce the specific gravity of the creature upon which they grow; and air being a bad conductor of heat, that which is held by the feathers assists to maintain the high temperature of the bird.

Generally speaking, birds are very particular about their feathers, and spend a good deal of time in cleaning, preening, and oiling them. Seagulls will sometimes fly quite a distance daily from the ocean to some fresh-water loch in order to indulge in a bath, and Starlings delight in a real good splash on the very coldest day in winter. I have, as a matter of fact, seen them get into a bowl placed for them in my garden and tumble about amongst a number of miniature icebergs floating in it, only a few minutes before they went off to roost, and it made me shudder to look at them. Most birds bathe either in dust or in water: and although they take a lot of care of their feathers, the wear and tear of time damages and fades them until their replacement by new ones becomes necessary. This is, however, not always the case, as some species—such as the Ptarmigan, for instance—are obliged to change their dress as a means of self-preservation, and the males of others are compelled to don gay suits in order to gratify the vanity of the opposite sex.

The moulting season is, without doubt, the most

trying period in the yearly round of a bird's life, and silence reigns o'er every grove where it is going on.

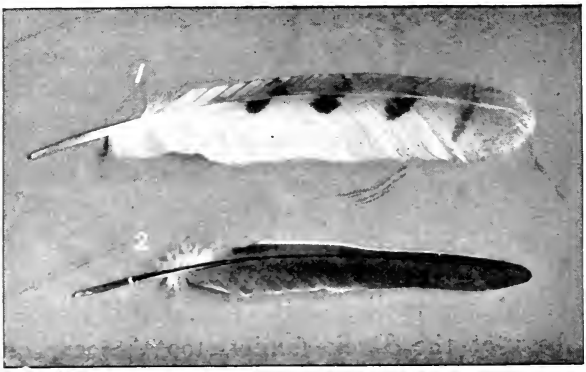
A great number of birds, such as Ducks, Owls, Hawks, and Swallows, have only one moult every year, and that takes place in the autumn, when every feather, great and small, is cast off and replaced by a new one.

Gulls, Plovers, Pipits, and Wagtails, amongst others, have a spring and autumn moult, in some cases including all or most of the small feathers and some of the wing and tail quills. Amongst double moulters may also be included the Red Grouse, a very strange thing about which is that the males and females change their plumage at different times. The former moults in autumn and winter, and the latter in the summer and autumn

Some species, such as Ptarmigan, Willow Grouse, and Grebes, change their dresses, partially or completely, as many as three times a year.

In addition to these complete and partial moults, there is what naturalists term a "border moult," which means the shedding of certain portions of a bird's feathers, whereby a visible change of colour is effected. It is believed that an absolute seasonal change of colour takes place in the feathers of such birds as the Wheatear and Stonechat, without even the assistance of a partial moult.

In the springtime, when everything is filled with awakening life and rivalry, the male members of



FLIGHT FEATHER (1) OF OWL, (2) OF PIGEON (*p.* 148).

many species drop the dull, unobtrusive portions of their garments and don the gay and decorative plumes of the marriage season.

Nature has wisely ordained that the shedding of old feathers shall be as gradual as the growth of the new ones, and that when a flight feather drops from the right wing its fellow shall, at the same time, fall from the left, so as to maintain a correct balance in the powers of flight.

I once knew a London lady who had migrated to the country cut both wings of her Fowls in order to prevent them from flying over the fence dividing their run from a neighbour's garden. By a little extra effort, the birds still managed to scale the boundary wall, and their owner declared that wing-clipping was no remedy unless carried to a disfiguring extent. I told her to cut the feathers

of one wing only next year, and thus upset the balance of the birds. This she did, and kept her Fowls within their own grounds as a consequence.

Nature's admirable rule in regard to the gradual shedding of old feathers has some remarkable exceptions, however, for the Laughing Owl of New Zealand casts those growing upon its body so quickly that it becomes nearly naked and is occasionally stung to death by bees. A great many members of the Duck family, too, become quite unable to use their wings for a time as a result of losing so many of their flight feathers all at once.

Feathers play an extremely important part in the preservation of birds from destruction whilst they are young and inexperienced, as I have endeavoured to show in the chapter on Chicks and also earlier in this chapter, and in some species they render the adult birds the same service. If Ptarmigans retain their dark dresses in the autumn after a fall of snow on the mountains or continue to wear their white ones after the snow has disappeared, great havoc is wrought amongst them by their natural enemies.

Some birds, such as the Grouse, wear thick, downy stockings right down to their toe-nails in the winter-time, and others that swim, dive, and obtain their food from water, such as Ducks and Cormorants, possess an oil gland at the root of the tail from which oil is pressed with the

bill whilst "preening," and applied to the feathers so as to render them waterproof.

Very few species like to fly or roost with a strong wind blowing behind them, as it ruffles their plumage.

From a consideration of feathers we pass on to speak of flight, of which there are three modes—(1) sailing or soaring, (2) gliding, and (3) flapping. The great majority of birds practise the second and third methods, and but few the first.

The flight feathers in all birds' wings are more or less convex or rounded on the outside, and concave or hollow on the inside, so that by taking a moderately large one and striking the air with it, first with the rounded side down, and then with the hollow side down, it is at once discovered that the resistance of the atmosphere is much greater in the latter than in the former stroke. Having by this little experiment formed some idea of the lifting powers of a single feather driven rapidly through space, it is easy to conceive what a number may be able to accomplish when firmly interlocked and driven by powerful muscles, of which a bird's wing is said to contain no less than forty-eight. The air slips off the rounded side of this wonderful combination of flight feathers in the same way that it does from the cover of an open umbrella, and is caught by the hollow side just as it is by the inside of an umbrella.

Wings vary greatly in shape and size, according

to the habits of their owners. In Eagles and Vultures they have a rounded appearance, but the feathers being long, the birds fly well, sailing round and round in majestic circles and remaining in the air for long periods of time with ease. Peregrine Falcons, Swifts, and Swallows have narrow, pointed wings, and fly with remarkable rapidity. In strong-flying species the folded wing generally measures twice the length of its owner's body, that is, taking the distance from the breast to the root of the tail.

Wing area varies very considerably in relation to the weight of the body to be carried. A French naturalist has calculated that a Swallow weighing one pound would require the enormous wing area of something like five square feet. The Australian Crane flies well on half a square foot per pound; and if a man weighing twelve stone were thinking of adopting flight as a means of locomotion, and could go to a shop and order a pair of wings on the very low basis of the Australian Crane, each one would need to be fourteen feet long and three broad, or double the area of an ordinary room door.

Wing beats vary in rapidity from about ninety per minute in the slow-going Heron to an uncountable speed. Even such birds as Seagulls manage to get in as many as one hundred and eighty strokes in a minute. Many species may be distinguished at great distances by their methods

of flight. A Pigeon can be easily identified from a Rook when a long way off by its much more rapid wing flaps, and a Wagtail from a Swallow by the fact that the former flies in waves, beating its wings rapidly until it has risen to the top of one imaginary wave in the air, when, partly closing them, it glides down to the bottom of the hollow between the wave it has just surmounted and the next, then rising quickly again. The latter bird, on the other hand, dashes away in long sweeps and graceful curves. Seagulls are very clever at soaring in a breeze, and can follow a steamer travelling at the rate of twenty miles an hour without ever appearing to flap their wings; but they have to yield the palm to the Fulmar Petrel, which is so wonderfully adroit that it can glide in and out amongst great, angry ocean waves in a way that would make any boy or girl quake for its safety, and yet never stir a feather. A strange thing about this species is that it never appears to fly over land. I have sat for hours together on the top of a cliff in the face of which thousands upon thousands were breeding, and although great numbers of them were constantly gliding to and fro over the sea in front, not one passed over any part of the land behind me.

A breeze of some sort is necessary for soaring birds, and it is marvellous how they can make use of its varying forces. I have been on a sea-rock some three or four hundred feet high on a windy

day, and when I have put my head over the edge of that side struck by the breeze, instead of feeling it on the top of my head, it came straight upwards into my face in a strong and almost steady blast.

HERON ON THE WING (*p.* 154).

Upon striking the perpendicular wall of the crag the wind was forced upwards, and the Gannets inhabiting it appeared to lie literally on the upward rushing currents of air with outstretched wings.

When taking wing, birds rise against the wind because the solidity of the air enables them to strike it with their wings. By pushing themselves forward against the breeze they make it lift them in the same way that a boy does his kite when he

hauls at the string. If they attempted to rise with their tails to windward and mount into space in that way, they would be under the same disadvantage that a child would be trying to bounce a ball on soft sand instead of solid rock. Many birds find the effort of rising the first few feet very trying indeed if there is no wind to help them, and sometimes cannot take wing at all off a level surface. The Albatross, for instance, can soar for days together in the blue vault of heaven with perfect ease, but cannot rise off the deck of a ship in calm weather. Some years ago a great flock of Gannets had the misfortune to get into a bay in the south of England during a dead calm, and the poor birds, being unable to rise, were rolled ashore by a heavy sea in such numbers that one man alone took away a cartload.

Kestrel Hawks and Buzzards love a breeze in which to hover, because it enables them to steady themselves with far less effort than a calm, and thus to examine the ground below more leisurely for prey.

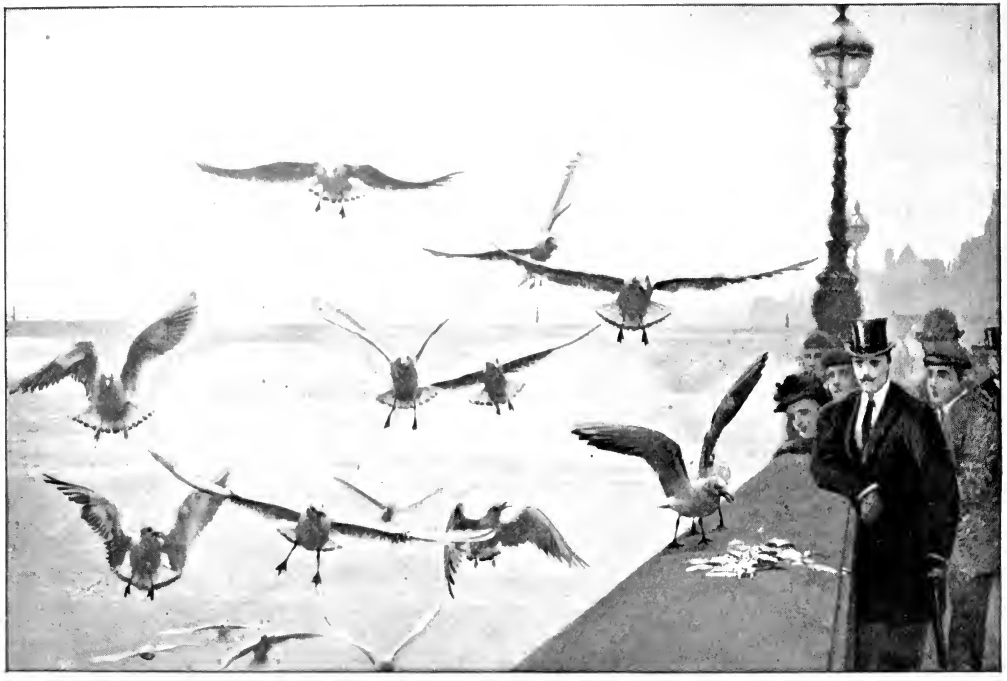
Some birds fly for the mere pleasure of the exercise, and others hardly ever take wing except from necessity. Rooks indulge in airy waltzes occasionally, and even somersaults; but Corn Buntings are so lazy that flying from one telegraph post to another appears to be such a great effort that they often trail their legs behind them.

During flight many birds' wings assume all sorts

of curious positions, as shown in our illustration opposite of Blackheaded Gulls on the Thames Embankment in winter time. As a matter of fact, they can make their tips meet over their backs or beneath them, thus completing a circle, although they do not indulge in this kind of gymnastic exercise when flying about on the ordinary business of their lives. A Seagull's wings have been photographed in twelve different positions in a second, and the picture on page 161, which represents an enlarged section of a photograph of Terns in the air, shows several different wing positions.

In alighting, some species depress their spread-out tails and work their wings with the shoulders up and the tips pointing towards the ground, and as soon as they have touched the earth fold them gracefully to their sides; whilst others extend them straight out with their tips pointing skywards. The picture on page 163 of an Osprey in the act of alighting on a dead stump above its eyrie shows this bird's peculiar manner of stopping.

What has often struck me as being very marvellous about the flight of my feathered friends is their quickness of sight and judgment. An old Cock Sparrow having a wing stretch of eight or nine inches will fly between two garden palings considerably less than three inches apart without appearing to slacken his pace, and a flock of Starlings, thousands strong, will alight upon a tree until its branches are borne down by their weight,



SEA GULLS ON THE THAMES EMBANKMENT (*p.* 158).

yet two birds never appear to have selected the same spot to settle upon when they suddenly drop from the air for a rest. Of course, they do occasionally make errors of judgment; for even such a sharp-eyed, swift-winged bird as a Swallow is struck down by a golf ball; and I remember once accidentally felling one to the ground whilst making a cast for Trout with a fly-rod. A curious instance of speed miscalculation by a Swallow happened to a gentleman of my acquaintance in Westmorland last summer. He was riding his bicycle along a country road one day when he noticed a Swallow attempt to cross his path dangerously close in front of him, and instantly heard a curious rustling noise. Jumping off his machine, he was sorry to find the unfortunate bird ruffled and dead amongst the spokes of his front wheel. Partridges, too, are guilty of making the same kind of mistakes, and by attempting to cross the line in front of a train in motion sometimes get knocked down and killed by the engine.

The size, shape, and texture of a bird's tail feathers have a great deal to do with its mode and powers of flight. Tails are capable of being expanded or closed, elevated or depressed, and they more or less act as rudders to their wearers. Where the wings and tail are both ample, as in the case of a Sparrow Hawk, the flight is easy and graceful; where the tail is short and the wings fairly long and vigorous—as in the Snipe, for

instance—the flight is generally rapid and impetuous: but where the tail is long and the wings are short and rounded, as in the Magpie, the flight is a laborious flutter.

The noise made by the wings of some species is very great. For instance, that produced by a flock of Golden Plover flying close to one's head on a dark night is something like that made by a draper tearing linen. When a Great Skua attacks the head of an intruder upon its nesting-ground, the roar of its swift wings through the air is like the rush of an express train.

SANDWICH TERNS ON THE WING (*p.* 158).

Even such soaring birds as the Albatross, Vultures, and Pelicans produce a loud, musical "sing" with the tips of their wings, and their presence is often detected, it is said, by the noise. What must be a particularly annoying thing to a bird that flies much is to get one of its flight feathers cut in two by an accident in such a way that every wing-beat produces a loud *wuff, wuff, wuff.* A Rook with such a feather lives in my neighbourhood, and yet his companions do not object to fly with him because of the noise.

The speed and endurance of some species are subjects of marvel. It is asserted that both the Common Swift and the Virginian Plover can travel at the astonishing rate of well over two hundred miles an hour, and the former bird is on its untiring wings sixteen hours a day. We talk about our "ocean greyhounds," and our "Flying Scotsman" and "Flying Dutchman" expresses; but with an unlimited consumption of coal and water their performances are paltry in the extreme when we compare them with those of a bird which could easily fly from London to New York during the light of a single day on a mere thimbleful or two of gnats, or of one that can take its breakfast in Canada and its supper in Brazil.

Sustained powers of flight are chiefly useful to the majority of birds during their migratory journeys. On these occasions they perform some astonishing feats, principally during the night-time, when I

OSPREY ALIGHTING ON DEAD STUMP (*p.* 158).

have heard different species talking to each other as they passed over London. The migratory movements of birds are in many respects very curious indeed. For instance, no species belonging to the northern hemisphere ever journeys south to breed, and no winged inhabitant of the southern hemisphere ever bends its course north in the spring to propagate its species. All breeding movements are in the direction of the Poles and away from the Equator.

An adequate supply of food has no doubt been the greatest cause in establishing migratory movement; but this cannot be urged as a reason in all birds, for there are instances where long journeys are made and innumerable dangers encountered without any apparent cause.

These great spring and autumn movements take place over certain well-established tracks, called "fly-lines" by naturalists, and the mystery of mysteries in regard to the travellers over them is that during the autumn journey the birds that know nothing about them from actual experience go first. Out of three hundred and sixty different kinds making the island of Heligoland in the North Sea their temporary resting-place, only in one single instance do the old birds precede the young ones, and that is in the case of the Cuckoo.

Migrants from Europe spend the winter in Africa as a rule, and it is said that those breeding farthest north in the summer fly farthest south in

winter, and that British Swallows and Martins reach Natal and Cape Colony.

In Greece and Egypt the natives say that a lot of small birds ride across the three hundred odd miles of the Mediterranean Sea on the backs of the migrating Cranes; and, strangely enough, it is a generally accepted belief that a small bird of the Finch family rides north every spring on the back of the Canada Goose—at any rate, they always travel together.

Of course, a lot of local migration goes on in addition to oversea travelling. Curlews leave the moors on which they breed in the summer and spend the winter on the mud flats by the sea. In August and September every year numbers of Gulls may be seen flying across the north of England from the German Ocean to the Irish Sea.

The flight of birds has had a great influence on the distribution of plant life, and many forests owe their existence in a great measure to seed eating birds. There is a species of plant in the West Indies which depends entirely for its distribution upon its seeds being carried away clinging to the feathers of birds, and it overloads its little servants to such an extent at times that they are unable to fly, and perish under their burdens.

Partridges living on heavy land get their feet so clogged with earth during wet weather that their flight is considerably reduced in speed in consequence of the additional weight they have to carry.

By this means the seeds of various plants are carried from one place to another, as is proved by the fact that Darwin once had a wounded Partridge sent to him by Professor Newton with a ball of earth attached to one of its legs. The clod was kept for three years and then broken up and watered, with the startling result that no less than eighty-two plants sprang from it.

ENJOYING A COOL BATH.

CHAPTER VI.

SOME WONDERFUL SONGS AND CALL NOTES.

Sight and Sound—Cheered by a Sparrow's Chirping—Why Birds Sing—Where the Music is Made—A Ludicrous Performance—How Birds Learn to Sing—Timing a Skylark's Vocal Exercises—Singing Competitions among Chaffinches—The Phonograph's Record of Thrushes' Songs—Blackbirds as Vocalists—The Times when Birds Begin to Sing in the Morning and Cease to Sing in the Evening—The Nightingale—The Sedge Warbler—The Grasshopper Warbler—Ventriloquial Birds—The Nightjar—Peewits—The Common Snipe and its Weird Sound—What a Cuckoo says when he is Angry—Frightened to Death by a Tawny Owl's Hooting—Birds that Sing Borrowed Songs: The Starling, the Sedge Warbler, the Marsh Warbler, the Robin, the House Sparrow, the Red-Backed Shrike—The Blackcap Warbler—Bird Language—Birds that Act as Sentinels—Call Notes—The Red Grouse—The Long-tailed Tit—Call Notes that Resemble Other Sounds—Baby Birds that Recognise the Call Notes of their Parents—Birds that Require Corroborative Evidence.

THERE is probably no country under the sun which is at once so crowded with busy human life and so filled with the joyous melody of wild bird song as Britain.

I have listened to our feathered vocalists during every hour of the day and night in solitary marshes and on breezy mountain tops, in shady copses and flower-decked meadows, on lonely islands and within sound of the roaring hum of big cities, from the most northern of the Shetland Isles to the

most southern of the English counties, and I fear to think what the country would be like without their cheering strains. The gloom of a birdless land has been strikingly forced upon me by visiting a Yorkshire moor in June, when Larks, Meadow Pipits, Golden Plover, Peewits, Curlews, Ring Ouzels, and other species have filled the air with their cries, and by revisiting it six months afterwards when everything has been thickly wreathed in snow and wrapped in the very silence of the grave.

I have only lately come to know what a source of comfort and solace wild bird songs must be to the unfortunate blind, and why we appreciate the sweet notes of nocturnal singers so much more than those poured forth by daylight performers. This discovery has been brought about by having to hide up in artificial tree trunks, rubbish heaps, and inside stuffed bullocks, in order to watch some of my shy feathered friends at close quarters. When we walk about in the fields by day our attention is divided between the senses of sight and sound. Our ear messages only receive half the attention they command during the hours of darkness, and I have been simply astonished at the increased effect produced by the song of a Skylark mounting the still air above the contrivance in which I lay hidden and unable to use my eyes.

The poet has it that human "song lightens toil"; and so does that of our feathered friends, for even the despised House Sparrow's oft-repeated *Chissick!*

Chissick! Chissick! has lightened the dulness of many a dreary London day for me, and I have tried to repay him by a noontide dole of crumbs spread upon the sill of my office window. A friendly carpenter fixed me a high draught board at the foot of this window, and I drilled a hole in it with a gimlet in order that I might watch my grimy visitors consume their share of my lunch.

The best time to hear Nature's choir is about four o'clock on a fine still morning during the first week in June, when the air is cool and sweet and every blade of grass bears its twinkling diamond of dew. Then each bush and tree appears to possess its winged vocalist, pouring forth such an ever-swelling flood of music that the very air around seems to palpitate with joy, and one wonders if even Heaven itself can be half so sweet and glorious. I have, happily, known many such grand mornings, and the glad remembrance of them is a priceless possession. Take my advice, boys and girls: don your strongest boots and go out to hear the birds sing their first morning hymn—it is the freshest and gladdest of all the day.

"But why do birds sing?" ask some of my young friends of me. For several reasons. First and foremost, I should say, because they are creatures of abundant health and spirits, and, like human beings, give vent to their overflowing happiness in song. They also sing from rivalry a great deal, and with such vehemence that they have been known to drop

dead whilst so engaged through rupturing some blood-vessel. I remember a sad accident of this kind happening to a gifted Thrush that used to sing on a tree-top in a friend's garden not far from my home.

LESSER BLACK BACKED GULLS. *p.* 172.

Strange as it may seem, they also sing from anger in some instances. Last summer I found a Garden Warbler's nest, and every time the hen was put off her eggs, in order that the camera might be focussed and made ready for her to be photographed on her return, she treated us to a very poor imitation of a few bars of her mate's beautiful song before she commenced

to abuse us in her ordinary harsh language. This generally happened whilst the male was warbling away his hardest in some bushes not far away, so that there could be no mistaking the sex of the angry songster. Then there is the well-known case of the Sedge Warbler. If a stone or clod of earth be thrown into some bush wherein a member of this species is sleeping, the startled bird at once commences to sing, which performance can hardly be considered as anything in the nature of a vote of thanks for being so rudely awakened from its slumbers.

An interesting thing, by the way, about song is that only birds and men have the power of stirring the emotions of their kind by means of its exercise.

I find children almost unanimous in the belief that birds sing with their bills. I suppose it was the possession of this erroneous idea which made bird fanciers of old split the tongues of unfortunate Jackdaws and Starlings in order to make them talk all the better. I once met one of these individuals, who was under the firm conviction that no bird could talk or sing well unless it had had its tongue divided by means of a sixpence ground sharp!

Bird notes are produced, as a matter of fact, deep down the windpipe, at a point where it branches off into bronchial tubes, the business of which is to convey air to and from the lungs. At this point is fixed a delicate little membrane which produces the note of every bird that flies. Of course, variation

in the size and skill of its possessor accounts for the wonderful differences in the sounds it can give forth, and although it appears difficult to conceive that the hoarse croak of the Raven and the shrill whistle of the Sandpiper, the rasping skirl of the Partridge and the liquid song of the Nightingale, can be produced by the same kind of instrument, yet such is the case.

When a bird such as a Thrush is singing, the neck is worked up and down like the sliding tube of a trombone, in order to give its different notes the proper pitch, and often the throat feathers may be seen quivering as a consequence of the air vibrations taking place within.

The way in which a Lesser Black-Backed Gull manages to modulate the sound of its unmusical voice is most laughable. It will stand on a rock looking very solemn for a while, and then, gravely bowing its head until it has reached a position indicative of a sense of extreme humility, it will commence to utter the bottom notes of its call. The head is then slowly raised and thrown upwards and backwards until the crown sometimes comes within a few inches of the shoulders, when the top notes are reached and thrown out pell-mell between a pair of widely-opened mandibles. I saw the bird figured in the front of the illustration on page 170 repeatedly do this before and after its portrait was secured.

Most birds can quite easily utter their call and

alarm notes, and I have known the members of some species even sing with food in their bills, but I doubt very much whether a Lesser Black-Back could accomplish anything in this way.

In considering the songs and call notes of birds, the question arises as to how young ones learn those of their own species. Experiments have proved that some inherit them from their parents, whilst others learn by imitating them. It was at one time thought that if the eggs of the common fowl were taken to some remote island and hatched out by artificial warmth, the young cockerels would not know how to crow if they never heard a rooster's cheering note, but the birds soon proved that theory to be wrong by crowing as lustily as any mainland members of their kind. The same sort of experiment tried upon puppies taken from their mothers directly they were born proved that they knew how to bark like their kind, the sound of whose voices they had never heard.

Most birds have a baby language of their own which is not used after they grow up. In this language they make known their wants, fears, and whereabouts to their parents, and it is surprising how far off the apparently weak voice of a tiny Grouse or Curlew can be heard. Of course, there are exceptions to the use of a special language for baby birds. The young Peewit, for instance, uses the same note as its parents, only, of course, in a lower and weaker form, and so do young Rooks.

Young birds spend a great deal of time in learning to sing, and those of such species as the Song Thrush and Blackbird often commence in September and October, when their amateurish efforts may be easily detected.

As the spring advances a great improvement is often noticeable in the performances of many vocalists that one can keep under observation, and this is hardly to be wondered at when the enormous amount of practice indulged in is taken into consideration. The Chaffinch, for instance, reiterates his ringing "Sweet, will you will you kiss me, dear?" which in some parts of the country has been rendered as, "In another month will come a wheat-ear," thousands and thousands of times every day. Song Thrushes, too, spend all the time left after feeding and driving off rivals in repeating their delightful songs. Skylarks do not waste much time, especially on a warm spring evening after a shower or two of rain, as I have repeatedly proved by observation. On the evening of the 1st of April of this year I timed a particular member of the species upon my watch, and the results were as follows: sang thirty seconds, rested forty-five; sang one hundred and thirty, rested forty; sang seventy, rested forty; sang twenty, rested ninety; sang ten, rested ten; sang thirty-five.

The longest record of a Skylark's song I can find in my notebooks is six minutes and five seconds. The bird went up between seven and eight o'clock

YOUNG SONG THRUSH.

in the evening on the 7th of May, and at the time the weather was very fine and perfectly calm. The longest song record obtained during the first fortnight in July was two minutes and forty-five seconds.

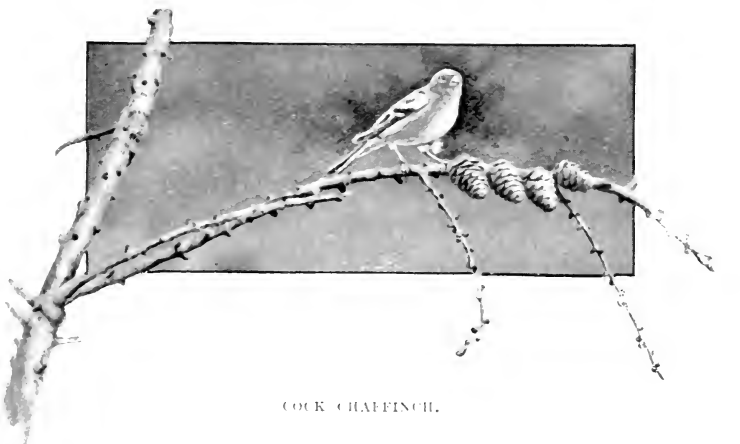
During the prevalence of breezy weather Larks mount the air by soaring head to wind, but when it is calm they are obliged to ascend in circles, and these are often not described in the same direction even on a single upward journey. Some people think that a wild Skylark only sings in the blue vault of heaven. This is by no means the case, as some members of the species prefer to pour forth their music whilst seated on the ground. One such lives on the side of a hill at the back of my house, and he enjoys the elevation afforded by a surveyor's peg, from which coign of vantage he habitually sings, regardless of the fact that I watch him frequently through my field glasses.

Then there are other birds that indulge in singing whilst upon the wing, although they are popularly supposed to perform only upon such platforms as are afforded by tree top, bush, or rock. These are the Missel Thrush, Blackbird, Song Thrush, Nightingale, Common Wren, Whitethroat, and Garden Warbler. Other species that commonly sing while they fly are the Skylark, Meadow Pipit, Tree Pipit, Swallow, and Cuckoo.

A very strange thing about some species is that

they sing better in one part of the country than another. Birdcatchers say that an Essex Chaffinch can beat one from any other part of the British Isles, and close observers with good musical ears have noticed that this bird's notes are stronger and longer in some districts than in others.

Singing competitions are still held amongst



COCK CHAFFINCH.

Chaffinch fanciers in the East End of London, and it is difficult to understand how the poor little prisoners have the heart to utter a note in their cramped cages, enfolded within thick handkerchiefs that make the air dark and stifling. German birdcatchers used to think that the blacker the darkness in which a singing Chaffinch was kept the better it sang, and were, sad to relate, guilty of the unspeakable cruelty of destroying the eyesight of their unfortunate little prisoners with red-hot wire.

The vocal accomplishments of some Song Thrushes are as much superior to those of others as are the notes of an Albert Hall concert singer to those of a bawling yokel in a country sing-song.

My brother and I have proved this in our attempts to secure records on the phonograph and comparing them. He used to get up very early in the morning, climb evergreens growing on a common not far away, wherein we knew Thrushes habitually sang, and fix the instrument in such a position that he could start it directly the birds commenced to hold forth at the first blink of day. We spent a lot of time and money in our endeavours to record bird songs, but to little purpose, as the records we did obtain of Thrushes' notes in the way described invariably split on account of the wax being so susceptible to atmospheric changes. When near enough to a bird to secure a really good record of its song, the grinding of the needle cutting the vibrations of its notes in the wax cylinder invariably frightened it away. We, however, made the interesting discovery that wild, free Thrushes sometimes sing under their breath, in the same way that human beings hum tunes over to themselves.

Bird songs are almost as difficult to turn into words that represent their sounds as they are to write down in musical notation. I have often tried to catch them in shorthand, but the speed at which a Thrush can rattle off his refrain is truly surprising when the brain of the writer has to search for words

that have a similar sound to his utterances. The following lines represent to my ears the sound of a Thrush's song:

Hear, hear, hear.
Wicked Mick, wicked Mick,
Pay thy debt, pay thy debt.
Quite right, quite right.
Pay pay pay.
Yes I do, yes I do.
Feat, feat, fiddlestick.
Tit tit titty tit.
Quartet, quartet.

The famous Scottish naturalist Macgillivray rendered it beautifully in the following words:

"Dear, dear, dear
Is the rocky glen:
Far away, far away, far away
The haunts of men.
Here shall we dwell in love
With the Lark and the Dove,
Cuckoo and Corn-rail,
Feast on the banded snail,
Worm and gilded fly:
Drink of the crystal rill
Winding adown the hill,
Never to dry.
With glee, with glee, with glee
Cheer up, cheer up, cheer up, here
Nothing to harm us, then sing merrily,
Sing to the loved ones whose nest is near:
Qui qui qui kweeu quip,
Tiurru tiurru chipiwi.
Too-tee, too-tee, chiu choo,
Chirri chirri chooee
Quiu qui qui."

Of course, no human words can ever represent, especially in cold type, the passionate vehemence, the sprightliness, or the tender pleading of a Thrush's song, which always reminds me of the methods of a clever preacher with a good voice. The loud, clear notes repeated in order to hammer home some important truth, the exquisite pauses in order to let them sink in, the low, sweet pleading and the cheerful ring of hope, are all there.

The Missel Thrush is a great favourite of mine, because he will sit on the topmost twig of some high tree even in February and make his clarion voice heard above the sound of the blast. Any bird can sing while food is plentiful, the skies clear, and things generally cheerful, but it takes a brave heart to bid defiance to the cold hurricane of a winter's day.

Many people are very partial to the mellow, flute-like notes of the Blackbird, and it must be admitted that their power and sweetness are hard to beat, especially when heard in some shady dell on a calm summer's evening. This bird loves the summit of a dead stump rising well above the foliage of surrounding trees, from which to pipe his morning and evening hymns, and will often, like the Common Wren, run over a few bars after having helped his mate to feed their young. The bird figured in the illustration on page 189 used to sing from a dead stump on the edge of a wood, and was photographed from our stuffed bullock one

day when it came down to drink at a favourite pond close by.

I have seen it stated in popular journals that the Blackbird does not commence to sing until after the sun has risen. This law does not certainly hold good with all members of the species, or in all parts of the country, for I have sat up all night on several occasions in order to make notes upon the time birds retire to rest and the time they wake up, and the following figures represent what I heard in Westmorland on the evening of the 7th and morning of the 8th of last June.

The sun set about half-past eight o'clock in a calm, cloudy sky, and rose again at about forty minutes past three in a cold, grey haze, and there was no moon visible, although its light on the evening of the 7th no doubt prolonged the singing time of some species.

At fifteen minutes past eight o'clock Thrushes, Blackbirds, Meadow Pipits, Willow Warblers, Garden Warblers, Common Wrens, Chaffinches and Cuckoos were all in full song. At half-past eight Thrushes, Blackbirds, Common Wrens, Willow Warblers and Cuckoos only were heard, and flocks of Starlings and Rooks were hieing away home to roost. By a quarter to nine the Common Wren had dropped out of the feathered concert as a performer. At nine o'clock the following birds were still all in full voice: Thrush, Blackbird, Willow Warbler, and Cuckoo. But a quarter of an hour later the Willow

Warbler had ceased to make itself heard. The competition between the Thrush and Blackbird now became keen, and I grew quite excited. At twenty minutes past nine the Blackbird stopped, and his rival retired five minutes later, the Cuckoo keeping on until just after ten o'clock.

Some of these times of retirement are, no doubt, subject to considerable variation, for although the Lark ceased to sing before the sun set, this bird habitually sings after that time.

At five minutes past two o'clock next morning a Wheatear commenced to salute the coming day, and five minutes later a Lark began to sing. The Cuckoo started to tell his name to all the hills around at a quarter past two o'clock, and the Thrush again beat his rival the Blackbird by piping forth at thirty-two minutes past two, which was exactly three minutes before his sable friend.

The Common Wren awoke at three o'clock, the Garden Warbler two minutes later, the Meadow Pipit at twenty minutes past three, the Willow Warbler one minute later, and the Chaffinch last of all at twenty-five minutes past three.

The mention of these early risers and of the times at which they saluted the dawn of a new day, suggests to me that my readers may be interested in knowing the retiring and rising hours of some of them at a corresponding period in winter.

On the 7th of December the sun sets at London, near which my observations were made

at ten minutes to four o'clock in the afternoon, and rises the following morning at six minutes before eight.

LARK ON GROUND.

House Sparrows retired at five minutes to four o'clock, Great Tits five minutes later, Blackbirds at ten minutes past four, Robins three or four minutes

later, and Thrushes at about seventeen minutes after the hour.

The following morning they were astir as follows: Thrushes at thirty-five minutes past seven: Robins three minutes later, followed by the Blackbirds at ten minutes to eight: House Sparrows two minutes to the hour, and Great Tits exactly at eight o'clock.

I have found by comparing my notes that many species will rise fifteen or twenty minutes earlier on a bright, clear morning than they do on a dull, dark one.

Thrushes and Robins retire latest and rise earliest, and the differences in the sleeping hours of Blackbirds and Thrushes in winter and summer are really wonderful when we come to compare them.

From early and late singers we come to a consideration of vocalists of the night. These are not many, and the great chief among them, if not of all singers, is, of course, the Nightingale, a bird that has given at once more pleasure and more disappointment than any other British songster.

Having been born and brought up in the Yorkshire Highlands, beyond the bird's most northern range, I never heard it sing until I was over twenty years of age, and the poets had saturated me through and through with the most unreasonable ideas about "the sweet and plaintive Sappho of the dell" warbling notes "far too pure for this gross earth," "that float from heaven on wandering wing," that "angels listen to," and so forth, and then, in common

with thousands and thousands of others who have listened to it for the first time, I was profoundly disappointed.

There are Nightingales and Nightingales, evenings favourable and unfavourable to them, and I had the misfortune to hear a poor singer on a cold, breezy evening, instead of a really good performer on a balmy, moonlight night, and the result was that I would have given half a dozen Nightingales for a single Skylark off my native hills.

But the poets and my ill fortune did the bird a real injustice, and I have since come to love its exquisite song so much that I have thrown my bedroom window open and lain awake listening to it throughout nearly the whole of a moonlit June night. The power and richness of its melody grow upon one, until the most prejudiced of us are bound to admit that it is the prince of British song birds.

Of course, its habit of singing in the shadowy stillness of the night when it has no rivals except of its own species, and enjoys the undivided attention of the listener, accounts for a great deal of its popularity, and many people who go out specially to hear it by night and belaud it do not even detect its notes when uttered in the full chorus of the wood by day. In fact, I have met lots of people living in a Nightingale country who did not even know that the bird sang by day at all.

Yet, in spite of all the laudation of the poets

and the bird's unsurpassed merits as a singer, we do not all love it. Not long ago there was something like a plague of Nightingales and Cuckoos in certain parts of Surrey, and I heard the inhabitants say hard things about them because of the fact that they could not sleep for the "row" the birds made. I wonder what some of the older poets would think of the song of their sweet Philomel being described as a "row"!

Stranger still, the keepers on a big game preserving estate in the south of England destroyed numbers of Nightingales because they fancied it disturbed their Pheasants at night.

Some naturalists are of opinion that as male Nightingales arrive in this country several days before the females, they sing during the hours of darkness in order to attract the attention of the latter as they fly overhead on their northward journey, but this theory does not account for the fact that there are parts of the country populated by the species and yet their songs are only heard by day.

Another curious thing about this bird is that its distribution is peculiarly limited, without any apparent reason. It does not wander much beyond Ripon in Yorkshire in a northern direction, or the Valley of the Exe in a western one, although there is reason to believe that it is slowly extending its range. The inhabitants of Kirkwall, in the Orkneys, claim to have heard it on at least one occasion.

The Sedge Warbler is another singer of the night, a thing one would hardly have expected when his extreme diurnal industry in this direction during May and June is taken into consideration. Whenever I visit the Norfolk Broads in the springtime, the bird's vehement scolding song becomes so engraved upon my brain that I hear it repeated over and over again, as if a phonographic record of it were constantly being run off on my pillow as I go to sleep. It is a queer lilting, jerky, hurried little song, and, as mentioned on a previous page, may be drawn from the bird even when it has no disposition to give a voluntary performance by flinging something into the place wherein it is roosting and startling it.

The Grasshopper Warbler can hardly be called a singer at all, for it reels out the strangest machine-like sound that ever issued from a feathered throat. In fact, the noise it makes is so unlike a bird's note that few people unacquainted with it would ever suspect that it came from an avian mouth at all.

The species has been named after the grasshopper because of the resemblance of its notes to the noise made by that insect. Some naturalists say that its song resembles the noise made by the green field cricket, but to me it sounds very much more like the rattling whirr of a woolspinner's reel as I have heard it whilst looking over a cloth factory. It is marvellously sustained, often lasting well on for a minute without pause or break.

During calm summer weather the Reeler, or Cricket bird, as it is called in many parts of the country, keeps up its concert all night long. In addition to its queer song it is distinguished by being a most accomplished ventriloquist. Whilst standing with its mouth wide open and its little body quivering from the vibrations going on in its throat, it can pitch its voice hither and thither, near and far, with results the most bewildering to the listener.

The Cornerake, too, another bird of the night so far as the great bulk of its harsh, rasping notes are concerned, is an excellent ventriloquist, able to throw its voice about in the most deceptive manner, especially whilst it is standing under the spreading leaves of the coltsfoot plant.

The Nightjar, as its name implies, is another nocturnal vocalist, with a voice somewhat similar to that of the Grasshopper Warbler, only much louder. Any boy can imitate it by raising the tip of his tongue to the roof of his mouth and then making it vibrate rapidly. The male bird has also another curious trilling note, which has been very aptly likened to the noise made by swinging a stout rope rapidly through the air.

Peewits, or Lapwings, are particularly fond of exercising their vocal organs during quiet spring nights, and the cleverest rendering of their pretty joyous note I have ever heard was invented by John Nudd, a Norfolk marshman, and runs, "Week

after week three bullocks a week," which is, to my mind, a better rendering of it than even the well-known "Little bit of bread and no cheese" is of the Yellow Hammer's song.

When I was quite a tiny toddler a Common Snipe gave me a great fright. I had been taken for a walk up the hills one evening in May by some older boys, and darkness

BLACKBIRD "WETTING ITS WHISTLE" AFTER A SONG (*p.* 181).

fell upon the land before we reached home again. As we passed a small, rush-clad swamp by the roadside there arose the most weird drumming sound, followed at intervals by a sharp *ajick, ajick, ajick* kind of note, I had ever heard. Sometimes it appeared to be to right and sometimes to left of us, but mostly overhead, and my companions, noticing how closely

I clung to them and k pt silence, bade me have no fear, as it was "nobbut a Hammer blate," the local Yorkshire name for the Common Snipe. Since that eventful evening I have heard the bird thousands upon thousands of times, and watched it during dull days mount the air to great heights and then precipitate itself headlong earthwards at terrific speed, meanwhile uttering its strange drumming or bleating note, which is a male accomplishment peculiar to the breeding season. An odd thing about it is that after hundreds of years of observation by the best ornithologists the world has produced, no man yet knows for certain how the bird makes this wonderful sound. Some contend that it is of vocal origin, others that it is made by the rapid vibration of the wings as the bird descends through space, whilst a third school claims that it is the result of air rushing through the stiff outspread tail feathers.

During warm evenings in April and May the air over a favourite breeding swamp is filled with the drumming of Snipe and their sharp *ajick-ajick* or *tjick-tjick* notes, which are uttered as they fly upwards to prepare for a new descent.

The Cuckoo often sings during the night, when I have had some rare good fun with the bird by imitating its notes and making it angry, in the same way that I used to break the slumbers of many an old rooster, when a mischievous boy, by crowing outside his house and making him believe a very lively rival was waiting to interview him.

One night last summer I teased a very irate old Cuckoo for a long while in the North of England by sitting under a stone wall near a little wood and mimicking him every time he sang. I allowed him to utter a few notes, when I commenced, and he instantly stopped to listen. After he had considered the merits of my song for a little while, he used some dreadful bad language about it in the following words: *Cu cu, ki ki, cu, cu cu cu, cru,* and at once proceeded to show how a Cuckoo's song should be properly rendered. Nothing daunted, I again held forth, and he as promptly stopped to listen. By-and-by he alighted on the wall-top within a few yards of my head, and said a lot of nasty things in a harsh, barking undertone. I never answered a word, and the grey of my clothes harmonising with the stones of the old wall in the semi-darkness, I was not detected. Again he sang out—nearer, clearer, and louder than I had ever heard a member of his species before—*Cuckoo, cuckoo, cuckoo.* I thought to myself, "Well, I can never match that, and you will discover the fraud this time anyway." I tried again, however, and with the most surprising success. He went almost frantic with rage, and flew round and round me until I broke the spell by laughing outright at him.

Owls are birds of nocturnal habits, and the weird *tu whit, to whoo* of the Tawny, or Wood, species may be heard at nights in many parts of the country. It is very startling and uncanny

when it first breaks upon the ear of a listener standing close under the boughs of the tree in which the bird is hooting.

It may seem curious, but it is nevertheless true, that a human being has been frightened to death by the note of a bird.

A number of years ago a labourer's wife in Westmorland took out a child one night and stood with it in her arms in front of her cottage whilst she listened for the homecoming footfall of its daddy. A Tawny Owl happened at the time to come along, and, alighting in a tree close by, gave vent to a loud *to whit, to whoo*, which so terrified the unfortunate child that it had a fit on the spot, and subsequently died from the effects of fright.

The next important class of singers to be considered is that of the imitators. In it we find many clever birds that habitually borrow notes from other species, and either mix them up with their own or tack them on at the end of their songs.

The Starling is probably the best-known and most accomplished British example of this art, and I have many times been deceived by it. I remember being on a bird's nest photographing tour along with my brother in the Hebrides some years ago, and very desirous of finding a Sandpiper's eggs. Whilst tramping across a particularly barren, rocky part of an island we suddenly came upon a small loch, by the side of which we sat down to rest for a while. In a few

WILLOW WREN.

minutes I heard a Sandpiper's low, sweet *wheet wheet,* and, whipping out my field glasses, began to search for the bird along the shores of the loch at my feet. The note was repeated, and I pursued my search with redoubled vigour until our photographer cracked out laughing at me. The note came not from a Sandpiper at all, but from a mimicking Starling seated on a rock not far away.

I have also been deceived by hearing the bird repeat the notes of both the Golden Plover and the Peewit from chimney-tops in the suburbs of London.

It has been said that the Starling is as clever an imitator as the American Mocking Bird, but although I have never had the pleasure of listening to the latter, I am inclined to doubt the statement—at any rate, so far as bird songs are concerned—for the feathered mimic of the West has been known to learn and repeat in two or three days the melodies of particularly accomplished Blackbirds and Skylarks in such wonderful style that their original singers became disgusted with their own efforts and were reduced to pining silence.

From observations made in nearly every part of the country, I should say that the Starling was much cleverer at picking up call notes than actual songs. I have heard it repeat those of the Curlew, Common Partridge, Golden Plover, Peewit, Sandpiper, and Ringed Plover, and there have been people deceived into looking about for a Tawny Owl hooting in the daytime, and even into rising

to let a supposed mewing cat into a house. It has also been known to try to imitate the sound of bells.

A Starling's own song is a chissicking, creaking, snapping, rusty sort of production, with a few finer notes that are mostly borrowed dropping out here and there at intervals as if by accident, and the wing-flapping, throat-vibrating fuss it makes over its vocal efforts is really ludicrous.

The Sedge Warbler is a great mimic, and seems to splutter out the notes of Sparrows, Chaffinches, Swallows, and other birds in a tremendous hurry and bewildering mixture.

The Marsh Warbler, a bird found breeding in limited numbers in certain parts of England every year, is considered by such ornithologists as Mr. Ward Fowler, and others well acquainted with its vocal powers, to be the prince of song-bird imitators, as it does not jumble up a number of borrowed notes, but runs separately through the songs of the birds it copies. After it has dealt with one it pauses for a while before commencing to run over another belonging to a different species.

Goldfinches, Linnets, Wheatears, Blackbirds, Thrushes, Jays, Robins, and even House Sparrows can all copy other birds' notes.

The Hon. Daines Barrington, friend and correspondent of the immortal White of Selborne, conducted a series of experiments bearing directly upon this interesting subject of imitation, and

found that a young Robin brought up within hearing of the song of a Nightingale had a melody consisting of three-quarters of that of Philomel and a quarter belonging to its own species.

Even the despised and unmusical House Sparrow has been known to sing like both the Canary and the Skylark when brought up in captivity among such birds. Now and again one may be met with even in the streets of a large town practising some strange borrowed note. Only last winter, whilst spending a few days in Edinburgh, I heard a bird of this species making use of a strange note that I should never have believed could proceed from the throat of an old Cock Sparrow had I not identified the bird in the roof-iron of the Haymarket Railway Station.

I have heard the male Red-Backed Shrike try to sing to his lady love, but it was the poorest bit of creaking out of notes borrowed from birds of the neighbourhood that could be imagined. It has been said that his near relative, the Great Grey Shrike, acquires the notes of other birds in order to draw them within his range of attack.

One would hardly expect the male bird of a species to sing whilst sitting on the nest and doing his share of the duties of brooding, yet such conduct is ascribed to both the Song Thrush and the Blackcap Warbler. The latter is a powerful and beautiful singer, whose notes I have many times had the pleasure of listening to in Surrey orchards and

woods; but although I love its song, my estimate of it is not such that I would mention it as a rival of the Nightingale, a proud place allotted to it by many students of Nature.

The dividing line between songs and call notes is an exceedingly difficult, if not impossible, one to draw, for those which are uttered by many species, such as Cuckoos, Owls, and Pigeons, are practically the only means of communication between one bird and another.

Birds not only have a very definite and well-understood language for the benefit and convenience of each species, but some of them have the power of communicating the presence of a common danger to every feathered neighbour living within hearing of their voices. Blackbirds, Chaffinches, Common Wrens, and Swallows all possess this power in a marked degree, as I have proved by placing a stuffed Owl close to their nests containing young ones.

The first-named bird's ringing *Spink, spink, spink!* is capable of all sorts of subtle variations, each with a separate meaning. He says "good-night" and "good-morning" with it, and his neighbours pay very little attention. If he be disturbed during the night, he flies out of the bush wherein he was sleeping without a sound and utters a fairly fast but not very loud *Spink, spink, spink!* when he blunders into another whitethorn some distance away, as much as to say, "Look out, neighbours, there's something strange astir to-night." But if a

cat should be seen stealthily approaching a favourite roost shared by himself and other birds of different species about bedtime, he rings out his notes as loud and fast as a fire alarm, and every feathered neighbour is instantly on the alert.

The Blackbird is, in short, a capital sentinel, and many gamekeepers encourage its presence in the fields where they have their Pheasant coops because of the timely warning it gives of the approach of vermin.

The inhabitants of the far-famed island of St. Kilda, situated some forty or fifty miles north-west of the Outer Hebrides, say that the great flocks of Gannets visiting the rock stacks round their isolated home every summer to breed have a sentinel to keep watch at night whilst the other members of the species slumber. These hardy inhabitants of St. Kilda, with whom my brother and I stayed for a while on one occasion, have to depend for a great part of their living upon the sea-fowl that visit their lonely home to breed, and in consequence are obliged to steal upon the sleeping Gannets and capture a number of them in the dead of the night. If the sentinel bird hears them climbing up the face of the rocks, which are truly awful in their steepness and height, he cries out to his friends, *Beero!* which means Beware. The fowlers then remain quite still, with their caps drawn over their eyes and their faces pressed against that of the crag they are climbing. Should the sentinel con-

A NIGHTINGALL IN ITS BOWER.

sider that he has made a mistake and there is no danger after all, he cries out *Gorrok! gorrok!* which being interpreted means "All is well, friends, you can go to sleep again." But if the fowlers should be detected the whole colony of birds will instantly take wing and fly away, uttering some angry language which sounds like *Beero! harro! boo!*

Of all my favourite wild bird calls the one I love best is that of the Red Grouse, a species that is not met with anywhere outside the British Islands. I have heard it on a thousand hill-tops during the dappled dawn of many a glorious autumn day, when it has filled the air to such an incredible extent that a stranger would have declared the whole moor alive with birds.

At the first blink of day the females awake and commence to call to their companions in a strange nasal note which sounds like *Vow, vow, vow!* and the males answer by jumping up, and, after rising on their wings some distance, throwing back their heads and descending with a resounding *Cabow, cabow, cabeck, cabeck, cabeck, beck, beck, beck!* When on the ground they also utter several other notes, such as *Cockaway, cockaway, go back, go back,* the last kind of cry with such astonishing plainness that many people unacquainted with the bird have mistaken it for a human voice. An old woman, who was not a native, whilst crossing a Yorkshire moor, heard a Grouse uttering its *go-back* note, and was so convinced that it was someone talking to her that

she at last angrily exclaimed: "Go back! not I, indeed! I'm off to market to sell my butter and eggs!"

When danger threatens, an old male will run up to the top of some heather knowe, or crag, and utter an emphatic *Cock! cock! cock!* which is the signal to be off.

Grouse are, as a rule, the most noisy between the first peep of day and the time the sun rises above the horizon on a nice frosty October morning, but often they have very little indeed to say, even under such conditions, if the day is going to turn out wet.

Call notes are used for keeping families of birds together whilst hunting for insects amongst the foliage and branches of trees, and the different members of a brood of Long-Tailed Tits signal each other's whereabouts all day long during summer, autumn, and winter by a sweet little *See-see-see!*

Such species as Golden Plover, Peewits and Curlews, that fly about in flocks, keep together in thick fogs, and during dark nights, by constantly calling to each other.

There are very few people who have not heard strange bird cries high overhead during autumn nights. They proceed from migrants winging their way to their winter quarters and anxious not to lose each other in the darkness.

The call notes of some species are strangely like other sounds. When the nest of the Common Buzzard is visited the bird circles high overhead,

uttering a cry something like the mewing of a cat. One low note uttered by a Waterhen whilst with her young in a reed bed is just like the sound made by a horse munching hay. The note of the Turtle Dove is so like the croak of a frog that I have known people take one for the other: and the hiss of a member of the Tit family whilst sitting on its nest in a hole in a tree is so snake-like and unbird-like that many a boy has been deceived by it and frightened away.

The baby chicks of some species know the call and alarm notes of their parents directly they leave the eggshell, as may be easily discovered by anyone who will take the trouble to study the habits of such a common bird as the Peewit. And how obedient many of these downy youngsters are to their parents! Last spring I spent a good many hours in an artificial rubbish heap watching the antics of a number of Redshanks that had young ones on the boggy land around me. The birds would shriek danger to their chicks for an hour after they had watched me into my hiding-place, and the wee things would obey the call as a rule and keep quite still, although such a proceeding must have been exceedingly wearisome to these active creatures. Whenever one ventured to disobey orders its parents flew close over its head and uttered a loud ringing note which sounded exactly like *Down, down, down!* and the adventurer sought the friendly cover of the rough grass.

Alarm notes are not, however, always believed in by the birds to which they are addressed, if they cannot see or hear something in the nature of corroborative evidence themselves, as I proved to my complete satisfaction on two occasions last summer.

I watched a male Redstart drop into a bank several times with food for his mate sitting on a nest in a hole in the rock, and at once determined to have a photograph of him. Waiting until the chicks had made their appearance and both parent birds were hard at work attending to their wants, I stuck a bit of stick in the ground at the foot of the bank and a little to the left of the nest for them to alight upon and have their portraits taken without being mixed up with the grass. They seemed grateful for the perch and used it constantly. By-and-by an artificial rubbish heap covered with twigs, grass, and coltsfoot leaves made its appearance a yard or two behind the stick. The birds used some rather bad language about the unsightliness of such an erection in the middle of a beautiful green field, but in a day or two got used to it, and went about the business of their lives without further comment or protest. One fine morning I tried to slip inside the contrivance whilst they were away searching for food, but the female was too quick for me. She saw me disappear, and gave out her alarm note very freely indeed from the branches of a tree close by. By-and-by along came

her husband with a handsome caterpillar in his bill. After peeping about for a minute or so, neither seeing nor hearing anything unusual, he evidently concluded that his wife had had an attack of nerves, and flew down to the stick by the nest. When he reached this he just looked round as if to say, "Dear me! I don't know whatever you are making such a fuss about," and popped into the nesting hole with his caterpillar. He came again and again with food, and went in and out of the bank without paying any heed to his wife's warnings.

A precisely similar thing happened, with the sexes reversed, in the case of a pair of Wheatears nesting not far away.

However much one may discuss the peculiarities and interesting points of birds' songs and call notes, a very poor idea at best can be conveyed of their sweetness and variety, and I would strongly advise every reader of this little book to go out into the fields and woods and listen for themselves. A knowledge of the songs and notes of wild birds will help to identify their unseen singers, not always with certainty, perhaps, as will have been gathered from the foregoing pages, on account of the trick some of them have of borrowing each other's notes: but field glasses and careful stalking will generally settle a doubt, and at the same time add very materially to the interest and knowledge of the student.

In conclusion, let me say that I have the

extreme satisfaction of having sent out numbers of people of both sexes and all ages to study wild life at home for themselves, with cameras and field-glass, and have been inundated with letters bearing testimony to the interest of the subject, while I have never yet received a single complaint.

A knowledge of Nature can hardly fail to make the student love her, and who can deny that a love of Nature is far more productive of health and happiness than is the possession of much gold?

"CAW, CAW, CAW!"

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