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NATURE · STALKING · FOR · BOYS ·

BY · W · PERCIVAL · WESTELL · FLS



WITH · AN · INTRODUCTION
FOR · BOY · SCOUTS

· BY ·

GEN · SIR · R · S · S · BADEN · POWELL

ONE · HUNDRED · ILLUSTRATIONS

BY

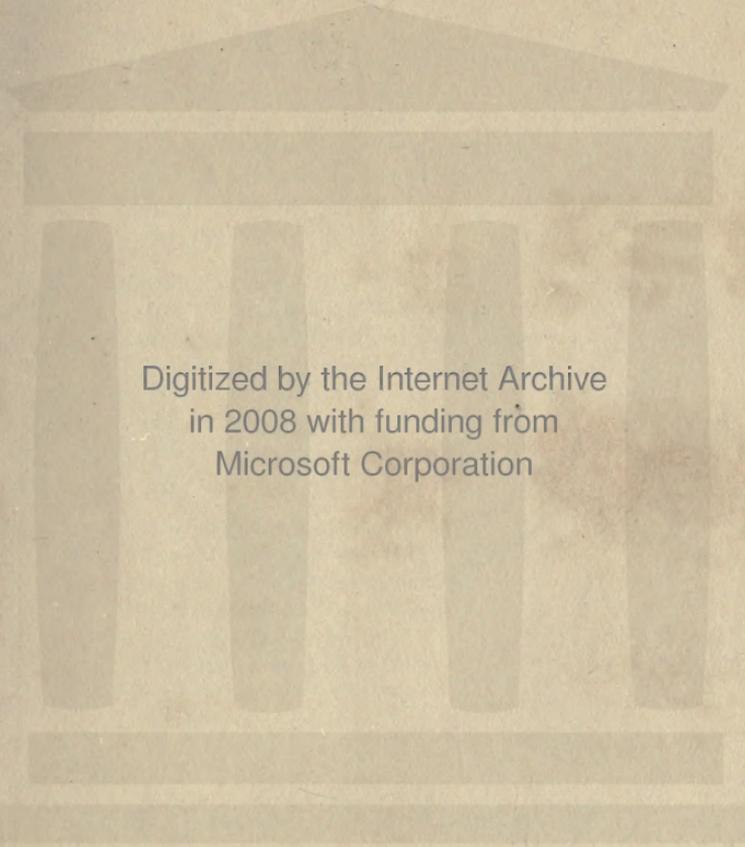
THE · REV · S · N · SEDGWICK · MA



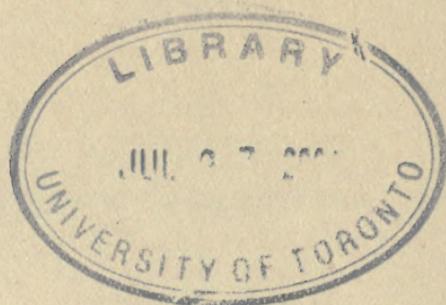
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CYRIL GREENLAND



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NATURE STALKING FOR BOYS

*" Look out for the birds of the air,
Look out for the beasts of the field ;
They'll tell you how and where
The other side's concealed.
When the blackbird bolts from the copse,
And the cattle are staring about,
The wise commander stops
And all patrols look out !*

*Look out when your front is clear,
And you feel you are bound to win.
Look out for your flank and your rear—
For that's where surprises begin.
For the rustle that isn't a rat,
For the splash that isn't a trout,
For the boulder that may be a hat
All patrols look out !*

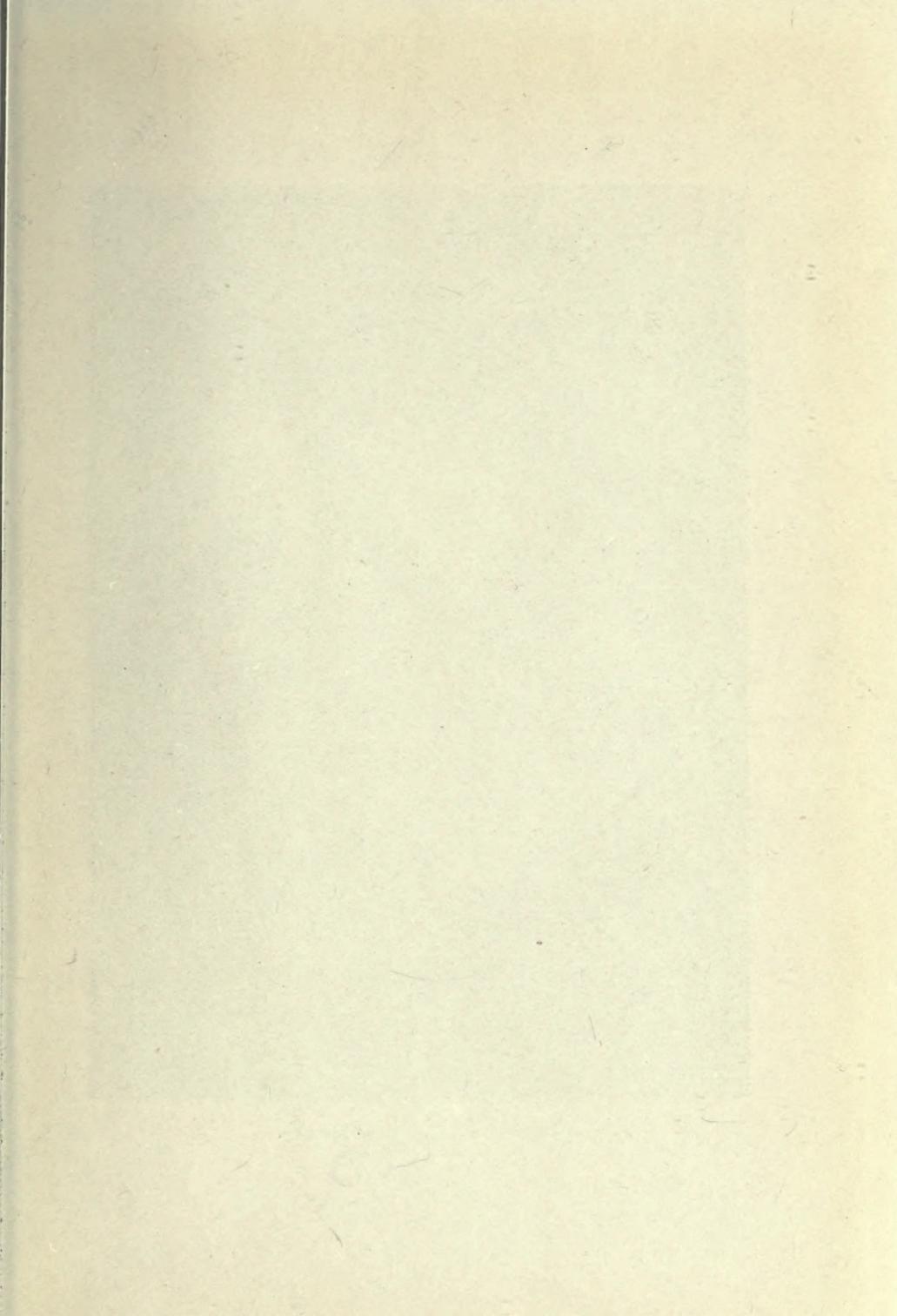
*For the innocent knee-high grass,
For the ditch that never tells,
Look out ! Look out ere you pass—
And look out for everything else !
A sign mis-read as you run
May turn retreat to a rout—
For all things under the sun
All patrols look out ! "*

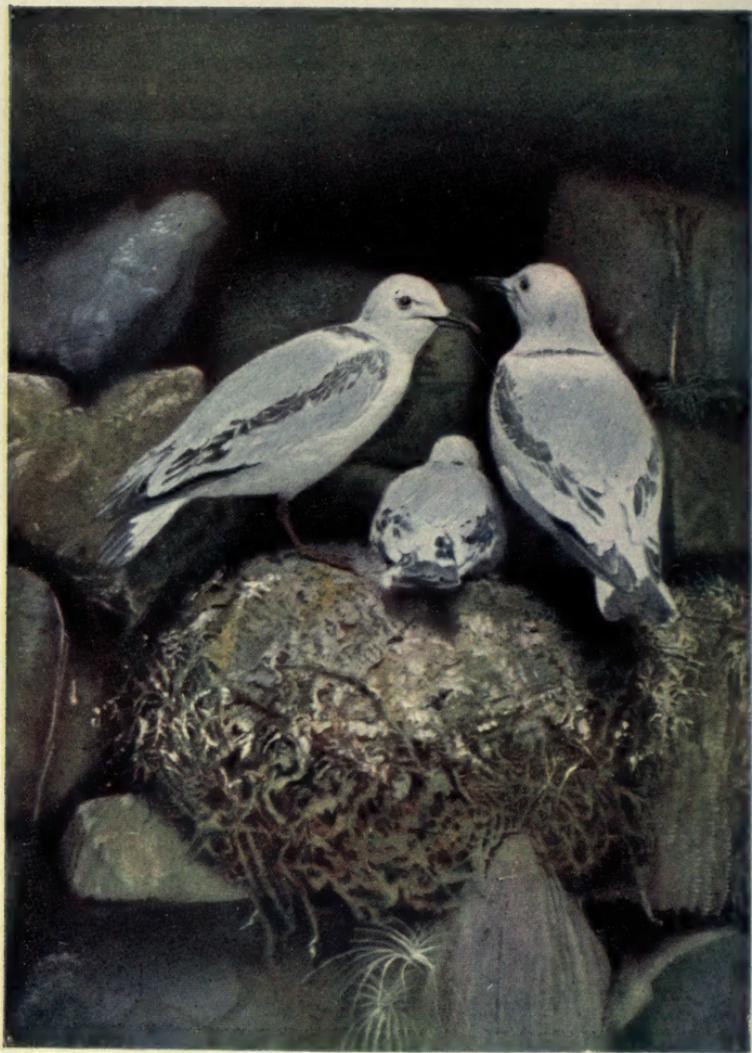
Rudyard Kipling

NOTE

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Ask for Dent's Stereoscope.





YOUNG KITTIWAKE GULLS.

NATURE STALKING FOR BOYS

THROUGH FIELD-GLASS, STEREOSCOPE
AND CAMERA

BY
W. PERCIVAL WESTELL, F.L.S.

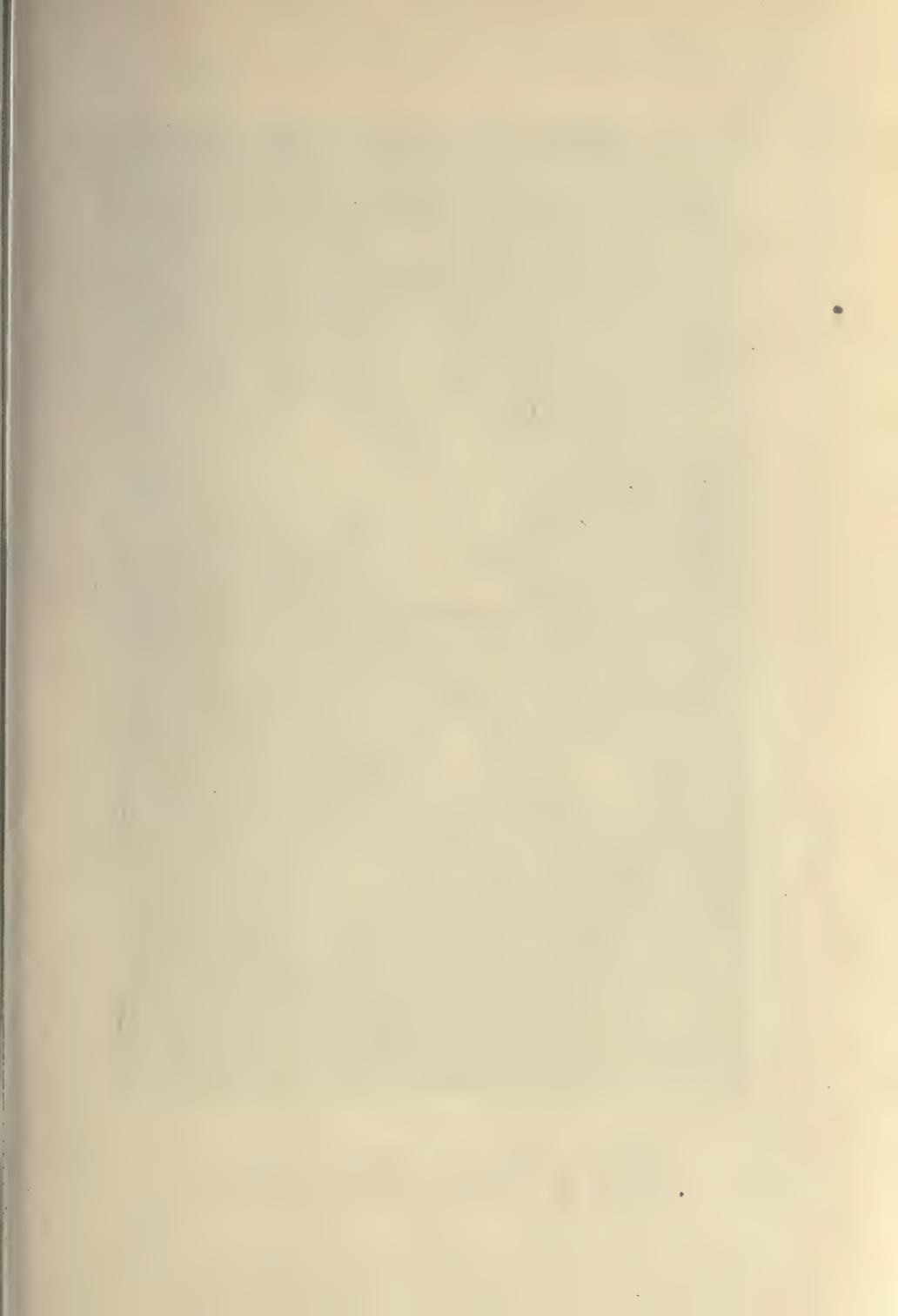
Author of
"Every Boy's Book of British Natural History"

WITH AN INTRODUCTION
FOR BOY SCOUTS
BY LIEUT.-GEN.
SIR R. S. S. BADEN-POWELL

FOUR COLOURED PLATES
100 ILLUSTRATIONS, AND A CHAPTER
ON STEREOSCOPIC PHOTOGRAPHY BY
REV. S. N. SEDGWICK, M.A.

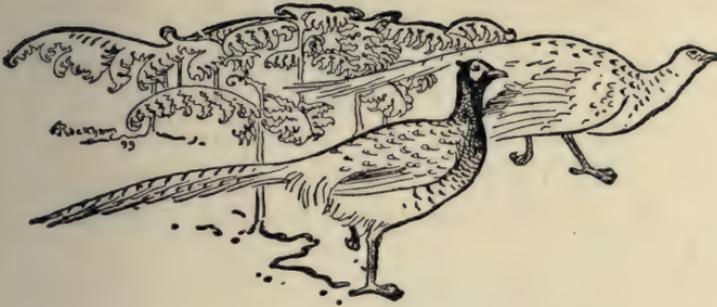
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MCMIX

“ 'Twas thus to man the voice of Nature spake:—
‘ Go, from the creatures thy instructions take:
Learn from the Birds what food the thickets yield;
Learn from the Beasts the physic of the field;
The arts of building from the Bee receive;
Learn of the Mole to plough, the Worm to weave;
Learn of the little Nautilus to sail,
Spread the thin oar, and catch the driving gale.’ ”





Russel Asen Paver



INTRODUCTION FOR BOY SCOUTS

BY

LT.-GEN. SIR R. S. S. BADEN-POWELL

NATURE Stalking, whether it is bird's-nesting, or creeping up to and watching the habits of wild animals, or discovering new kinds of insects or plants, is all part of the work of a Scout, and the more he practises it the more he enjoys it.

This book gives the experiences of a Stalker, and should be a most valuable help to Scoutmasters and Patrol Leaders in carrying out Stalking practices. For scouting on Sundays stalking is the best of all our duties, as it gives, through the study of God's works, a better knowledge of God.

Mr. Percival Westell, the author of this book, is also the author of *Every Boy's Book of British Natural History* and numerous other works. I had great pleasure in recommending his *Every Boy's Book* to Scouts and Scoutmasters in the

original edition of *Scouting for Boys*; and there is no doubt that the way in which Mr. Westell presents the subject to his readers is one which must make the subject, not only an interesting one to the general reader, but equally interesting to all Boy Scouts.

The book should prove a valuable aid to Scouts who are working for their Stalker's Badge, as it will give many hints as to the way in which they may utilise one or other of our alternative methods of passing the tests for this badge.

Wood-craft and Nature-craft are, perhaps, the most interesting sections of our work, and a Scout who will take the trouble to watch a few of the smaller animals, who owe their very existence to their methods of avoiding capture by their enemies, whether animal or human, will obtain the best possible teaching, namely, that of Nature herself, in the great arts of taking cover and adaptability to natural surroundings.

Rose Basen Parry



PREFACE

FROM what I have been told, and judging also by the large numbers of letters which reach me from many parts of Great Britain and her colonies beyond the seas, the publication of a new book under the joint auspices of Mr. Sedgwick and myself is keenly looked forward to by a large number of the boys and girls of our world-wide empire.

As a result of the publication of that wonderfully successful volume *Every Boy's Book of British Natural History*, and, at a later date, *The Boy's Own Nature Book*, we have been honoured by a most appreciative public, and among them it is a keen delight to number a very large proportion of young people.

In our present effort several new and attractive features have been introduced which we hope will make a strong appeal to boys both at home and abroad. Among these may be mentioned the series of stereo-photographs taken by Mr. Sedgwick with his wonderful home-made camera and his valuable hints on Nature-Photography, whilst the general interest of his collection of pictures is not only well maintained, but it will be readily agreed, I think, by those possessing our two previous books, that he has in this instance easily surpassed his previous efforts at stalking wild creatures.

In response to numerous requests, we have introduced sections in this third volume which make a

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direct appeal to Boy Scouts, and as there is so much in Nature—both in the animal and vegetable worlds—which a scout should be acquainted with to enable him to successfully carry out the important work he has taken up, it is believed that this book will prove of service to the thousands of boys who are desirous of proving of some service to their country and of training themselves in good citizenship. It would be beyond the scope of this book to deal with the work of a scout other than so far as he is brought into contact with animals and plants, and it has been thought advisable to strike a happy medium, as it were, and to produce a book of interest and service to the Boy Scout, the young lover of Nature, and even to adults, for we have been much struck with the number of grown-up persons who read these books and who express the wish that they were boys again!

As regards my own part of this companion volume to *The Boy's Own Nature Book* and *Every Boy's Book of British Natural History*, I have endeavoured to break fresh ground and to present the wonderful story of Nature by means of a new and attractive series of essays and notes which I hope will meet with the same success as my previous efforts.

I am specially honoured on this occasion with an introduction by Lieutenant-General Sir R. S. S. Baden-Powell, K.C.V.O., the popular hero of Mafeking during the Boer war and the ideal soldier and scout beloved by every boy who lives under the protection of the Union Jack.

The splendid spirit of patriotism which the General has shown in organising his Boy Scouts so quickly and efficiently deserves every recognition, and it is because

of my sympathy with the movement, and desire to help in making the outdoor life of the scout more interesting, useful, and enjoyable, that the features set out on the contents page have been introduced.

I wish to express also my great indebtedness to Mr. Rudyard Kipling—who has been for years the poet of patriotism—for his courtesy in giving me permission to use certain verses from "A Patrol Song" which are peculiarly well adapted for inclusion in this volume.

Possessed of this book and a home-made stereoscope, which Mr. Sedgwick has explained the making of, any boy will be able to enjoy looking at the stereo-photographs here reproduced, and to those who cannot see Nature in her own wild fastness this is the next best way of observing her wondrous pictures and winning ways. And for those fortunate boys who live among rural surroundings greater luck is in store, for by means of the home-made camera described in this and our former books they can secure original pictures and so rival our own photographer!

W. PERCIVAL WESTELL.

LETCWORTH GARDEN CITY,
HERTFORDSHIRE, *Autumn* 1909.







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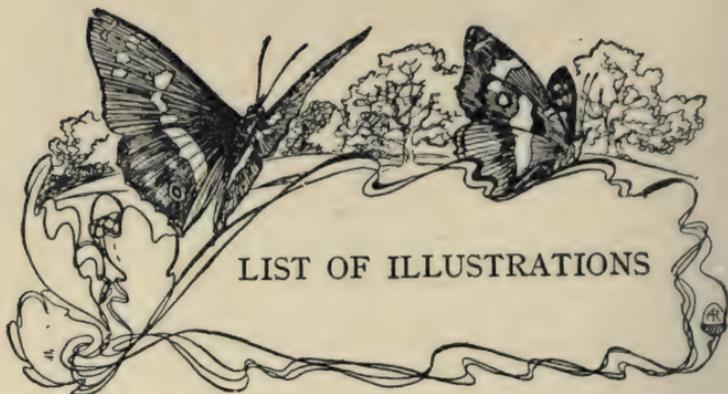
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Hedgehog.



Stoat.



Weasel in Winter.

NATURE STALKING FOR BOYS

CHAPTER I

TO "OUR BOYS"

IT is a privilege of which I am fully conscious to be able once again to address the large circle of young naturalists in our own and other countries who have, by their words and deeds, made it a distinct pleasure to serve them. One of the great delights of studying Nature is the splendid spirit of kindredship which prevails, and to observe the great and growing interest taken by young people in the treasures of the countryside is one of the pleasantest signs of the times.

A writer of books who feels that he can confidently number among his readers many real friends is, as a consequence, much encouraged in his work, and although I do not for one moment wish to appear desirous of blowing my own trumpet, as it were, I think I may say without any bragging that *Every Boy's Book of British Natural History* and *The Boy's Own Nature Book* have afforded considerable pleasure to thousands of boys and made my name familiar, not only in our

own land, but also in distant parts of the world where the Union Jack unfurls its banner to the breeze.

This popularity, I feel bound to admit, must be largely attributed to the interesting series of pictures supplied by Mr. Sedgwick, and the tale he has told of his wonderful home-made camera, and in the present volume I am of opinion he has enhanced his already wide reputation as an ingenious delineator of the winning ways of wild folk.

I should have liked, did space permit, to reproduce here a few of the many interesting letters that have been sent me from readers of my previous books, but even a small selection would occupy too much space. Exception must be made, however, in two cases, one being a letter from an unknown correspondent in far-away Canada, and the other from a lady in Kent.

Master Wendell P. B. Beairsto, of Charlottetown, Canada, was one of those boys who, in response to an invitation given in *The Boy's Own Nature Book*, sent in replies to three questions there set out. They were as under:—

1. How do you know a Toad from a Frog?
2. Do they move differently?
3. Did you ever hear of any one who made a pet of a Toad?

The young Canadian Naturalist thus replies:—

DIFFERENCE BETWEEN TOAD AND FROG 3

1. The Toad differs from the Frog in the following points:—The skin of the Toad is rough, with large swelling warts, while that of the Frog is smooth. The body of the Toad is more globular and puffy than that of the Frog; the hind legs in the Toad are shorter, and the posterior digits not so completely webbed, the animal being found on the land more than the Frog. The tadpoles of the Toad are blacker than those of the Frog. The Toad is carnivorous, feeding on flies and other insects and worms.¹ It sleeps in holes or burrows in the earth during the Winter. It has no teeth on either of its jaws or on the roof of its mouth, while the Frog has a series of fine teeth on the upper jaw and also teeth on the palate.

2. The Toad takes very short hops, and the very fat ones just wobble along, while the Frog is quite active and takes very long hops.

3. I have heard of a person who made a pet of a Toad. I forget his name, but I think it was Mr. W. J. Long. He used to see if he could find the limit of the Toad's appetite, but he could not, nor could he find any kind of insect or grub that it would not eat!—Your interested reader,

WENDELL P. B. BEAIRSTO (age 15 years).

I must compliment Master Beirsto on the

¹The food of both the Frog and Toad is practically identical.—
W. P. W.

general excellence of his replies to the questions, and also take this opportunity of conveying thanks to the several readers in the Old Country who forwarded somewhat similar letters.

The second communication to which I wish to refer is from Mrs. Maxted, of Maidstone, and I think it well to reproduce this letter, because it shows that my reference in *Every Boy's Book* to the Adder swallowing its young in the time of danger has not escaped notice, and has been the means of eliciting further information on an unsettled scientific question. Mrs. Maxted writes:—

“One of my boys has recently become the possessor of your most interesting book, *Every Boy's Book of British Natural History*, in which I find that most people are doubtful as to the truth of the assertion that Adders swallow their young in time of danger, although you think it extremely probable. May I give you an experience of my own?

Years ago, before my marriage, I was strolling along the edge of a meadow, which was enclosed on three sides by woodland, in the parish of Milstead, Kent. On turning a slight corner I came on an Adder lying upon the sunny bank with several young ones round her. At the slight sound made by my foot coming in contact with a dry twig the Adder opened her mouth wide, and, to my utter amazement, all the young ones (about a dozen)

disappeared within it! Then she glided up the bank, and vanished in the hedge which skirted the wood."

I may say that this is by no means the only letter I have received on this interesting subject, but at present it still remains "not proven" as they say in Scotland; and you boys should, when Nature stalking, keep a sharp look-out for the Adder and see if you can discover any fresh facts concerning it.

There are probably many of you who have not the opportunity of taking walks in the country among the birds, and trees, and insects, and flowers, but few of you will be unable to visit some park or open space, and many of you will have gardens in which something worth looking at is always on view, or attend schools in which Nature lessons are frequently given.

The one great thing for you to remember is, to use your eyes and ears, especially when you are in the country. At the same time your eyes and ears are not only to be put to service when you are away from the city or the town. When you are in the parks, look on the ground and also above it. I remember reading a good example as to this told by General Baden-Powell, the hero of Mafeking, and the "idol soldier" of so many young people. The general was one day walking with a friend in Hyde Park. His friend was a very quick and

active person. He was a man *who used his eyes*, and Baden-Powell tells us that as he and his friend walked along the latter picked up a button from the ground, and the next moment spoke about a horse some distance away that was lame in one of its legs.

Now what does this teach us? Just this. That we should always be on the look-out for things. That we should look close at hand and far away. So many people go through life with their eyes shut, as it were, and lose, as a result, much of the enjoyment to be obtained.

Another thing I should like you to bear in mind is that everything in Nature is worth looking at, and that every moment instructs. You have a natural love for animals and plants. You have your pets; you like to hear the birds sing and to watch their winning ways. Nothing pleases you more than to gather a nosegay of flowers from Nature's own garden. Let me ask you one favour, however, and that is this, pay heed to the common things, and do not be destructive nor cruel to bird or beast.

You are more likely to be interested in knowing why an animal or a plant is found in a certain place than you are to rest content with the knowledge that it is there. You will want to know how it came there, how long it has been there, what it does for a living, and where it goes to.

You see a pond. You will want to know how and when it was formed, what there is in it, and how it got there. All these questions, and a great many others, are bound to occur to you, especially on your rambles in the country. In a way I, on my part, promise to do my best to be of some service to you, not so much in the way of instruction as to show you how interesting Nature is, how her children feed, how they live, how they build their nests, how they sleep, and so on. When you have become interested my task will be ended; for bird, and beast, and flower will speak to you; and you on your part will, I feel sure, be more than ready to listen.

Charles Kingsley was a delightful Naturalist, and the beautiful interpretations he gave us of Nature will probably be known to you through his books *The Water Babies* and *Glaucus, or the Wonders of the Shore*. Kingsley's *Letters* have among them the following sentences, and I commend them to your notice:—

“Study Nature, not scientifically, that would take eternity to do it so as to reap much moral good from it. . . . Do not study matter for its own sake, but as the countenance of God. Try to extract every line of beauty, every association, every moral reflection, every inexpressible feeling from it. Study the forms and colours of leaves and flowers, and the growth and habits of plants;

not to classify them, but to admire them and adore God. Study the sky! Study water! Study trees! Study the sounds and scents of Nature! Study all these, as beautiful in themselves, in order to recombine the elements of beauty; next, as allegories and examples from whence moral reflections may be drawn; next, as types and tones of feeling, etc.; but remain (yourself) in God-dependence, superior to them. Learn what feelings they express, but do not let them mould the tone of your mind, else, by allowing a melancholy day to make you melancholy, you worship the creature more than the Creator."—Kingsley's *Letters*.

There is one thing I must still impress upon you, and that is to love all things that possess life. Indeed, you need not stay even at that, for you should love to learn something concerning any subject or object of interest. Although dead subjects, such as Geology, Archæology, Coin and Stamp Collecting, and so on, do not present that living interest which is supplied by animals and plants, each in their way help to build up the story of the world and enable us to piece it together and make a chain the like of which has no serious rival.

You will be told of what to see in the country, how to know your country, and so on in succeeding chapters, and to these I hope you will devote attention.

Let me quote some verses from an unknown source respecting a Boy and a Sparrow, the moral of which will, I am sure, come home to each one of you. Here they are:—

Once a sweet boy sat and swung on a limb;
On the ground stood a Sparrow-bird, looking at him.
Now, the boy he was good, but the Sparrow was bad,
So it shied a big stone at the head of the lad,
And it killed the poor boy; and the Sparrow was glad.

Then the little boy's mother flew over the trees.
"Tell me, where is my little boy, Sparrow-bird, please?"
"He is safe in my pocket," the Sparrow-bird said;
And another stone shied at the fond mother's head,
And she fell at the feet of the wicked bird, dead.

You imagine, no doubt, that the tale I have mixed;
But it wasn't by me that the story was fixed.
'Twas a dream a boy had after killing a bird;
And he dreamed it so loud that I heard every word,
And I jotted it down as it really occurred.

I wonder if any reader of this book has ever had a dream anything like that recorded in the above verses?

When you learn to know animals and plants intimately you will no doubt come to love them, and this reminds me that the present Queen of Roumania, like our own beloved Queen Alexandra, is a great lover of animals.

The Roumanian Queen writes under the pen-name of "Carmen Sylva," and besides being a

clever musician, poet, and painter, she has a kind heart and a right feeling for the animals whose cause is even to-day in such need of help. Let me quote a few lines by "Carmen Sylva," and may they make an impression upon you. She writes:—

"I love all animals, even Spiders, they spin so cleverly and are such excellent mothers. Besides, they are musical. My friend, the Swedish composer, Hallström, told me that for a long time he had two Spiders which would let themselves down from the ceiling by long threads when he played, and station themselves on the piano to hear the music. Of Ants and Bees I will not speak; one who does not love them is so stupid that I have nothing to say to him. Even Wasps are not as black as they are painted. For Snakes only I have no liking; they terrify me; but my aversion is doubtless due to the fact that I have not studied them enough. It seems to me impossible not to love an animal whose innocence and goodness one has accurately comprehended. How many kinds of insects have I painted with real delight, begging them to sit still upon my hand until their portraits were finished! How many Bumble Bees have I made my fast friends!"

That last sentence about the fussy Humble Bee strikes the right note. You should endeavour to make *fast friends* of animals, and it is astonishing how intimate the friendship may become if the

wild creatures of wood, stream, field, lane, and hedgerow learn to know that you are merely watching or stalking them, without doing any harm.

The little incidents that crop up are full of interest and charm. Some serious, some humorous, but all interesting, and once your curiosity is aroused you will find yourself quite unconsciously studying animals and plants with increased interest and pleasure. That long face without a smile or an intelligent expression will disappear, and I make no excuse for asking you, in the words of a writer, to smile to-day!

If things go right smile, and just as much if they go wrong smile! A holiday is no holiday at all if there are sour looks and scowls and ugly, dissatisfied words. Besides, even supposing it should pour with rain, is not rain beautiful, and if a train should be missed, surely there will be another? And, after all, it is much easier to put up with mishaps if you laugh at them than if you cry, and your laugh will cause others to make the best of their misfortunes, and you will all be jolly together. So smile to-day!

CHAPTER II

HINTS ON STEREOSCOPIC PHOTOGRAPHY AND HOW TO MAKE A STEREOSCOPE AND PORTABLE TENT

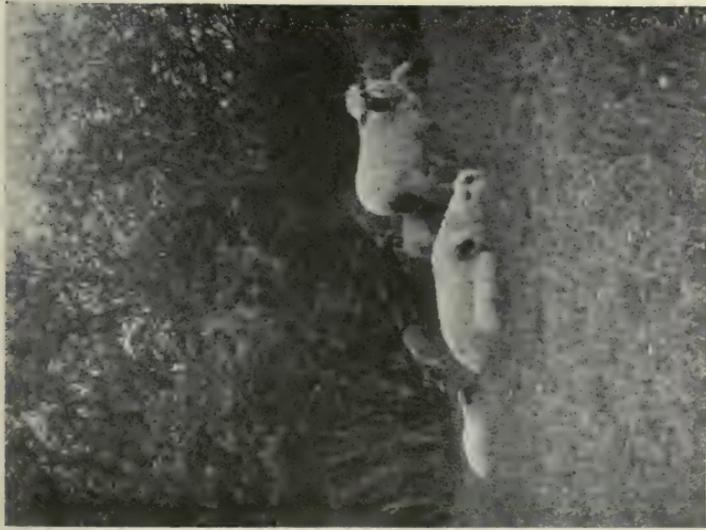
BY REV. S. N. SEDGWICK, M.A.

THE ADVANTAGE OF TWO GOOD EYES

THE special feature of the illustrations in this book consists in the stereoscopic pictures, about which our young readers may like to have a few words.

Stereoscopy — “solid-seeing” — depends upon our having the use of both eyes. The picture which the left eye sees is slightly different from that which the right eye sees; that is to say, in viewing any object the left eye sees a little more round it on the left, and the right eye further round it on the right. These two pictures combine to form one single impression, and the effect is that the object stands out in relief, or solidly, in the midst of its surroundings.

I have to confess that, whilst writing upon this subject, I have never been able myself to see anything stereoscopically, being deficient in one eye; and it is with a little touch of envy that I have taken the stereoscopic pictures in this book, and heard my friends' exclamations of delight as they have looked at them through a stereoscope! The



Sheep and Lambs.

advantage of possessing two good eyes is much greater than at first sight may appear. By their joint aid, we are able to place any object in its actual relation to other objects, and to gather a far more exact notion of its size. With one eye, everything appears "flat," *i.e.*, in one plane. A little experiment will serve to show how useful is the power of stereoscopic sight. Try to thread a needle with both eyes open, and it is a comparatively simple task, as it is easy to place the thread exactly opposite the eye of the needle; try to do the same with one eye closed, and it will be found much more difficult.

People with two good eyes should have no trouble in pouring out a glass of wine; people with one eye will often pour the wine upon the cloth and not into the glass, because in holding the bottle above the glass they cannot tell whether it is exactly above it, or slightly nearer or further from them than the glass.

And here is a little parlour trick which may be played at an evening party and will give some amusement, whilst showing again the disadvantage of seeing with one eye. Place a sixpence on the edge of the table, so that a touch with the finger will send it to the floor. Stand away from the table at such a distance that by slightly bending forward and keeping the arm straight you can just reach the coin with the forefinger of the right

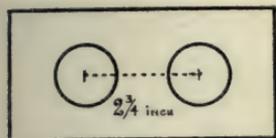
hand. Now close one eye and try to hit the sixpence from the table. You will find that most people will strike the air in front of the table, and miss the coin several times, until they learn to judge by experience of its actual distance from them.

HINTS ON STEREOSCOPIC PHOTOGRAPHY

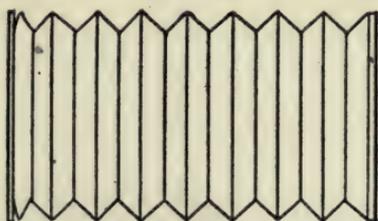
Stereoscopic pictures are taken with two lenses which are separated from one another the same distance as the human eyes. Roughly, this distance is $2\frac{3}{4}$ inches.

The lenses must, of course, be of the same focal length; and, therefore, if any of our readers desire to make a stereoscopic camera for themselves they must see that the lenses are "paired" first of all. My first stereoscopic camera was made in the following way. I bought a second-hand square-bellows half-plate camera, which cost 10s. to 12s. I then bought from one of the photographic dealers two single achromatic lenses, which cost 1s. 6d. each. The dealer kindly allowed me to try the lenses roughly at the time, and I had no difficulty in getting a pair of 6 inches focus. I mounted these, with their centres separated $2\frac{3}{4}$ inches, in a lens board on the camera front; made a "septum" or separator of brown paper, to be fixed inside the camera to divide it into two com-

partments, one for each lens, and then my camera was complete, with the exception of a shutter. There are many stereoscopic shutters in the market; none better than the Thornton-Pickard,



Camera front, showing position of single lenses, mounted.



The septum, or separator of brown paper, for dividing camera into two chambers.

but as these are rather expensive, I made a rough cardboard shutter which slid backwards and forwards in front of the lenses, and which acted

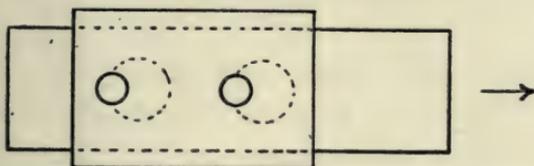


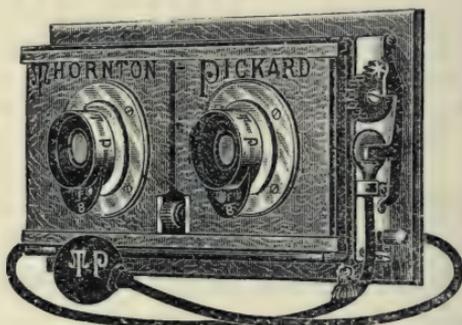
Diagram of cardboard shutter, worked by pushing backwards or forwards across the lenses.

perfectly well for all purposes except instantaneous photography.

Later on, I found it necessary for my lenses to be movable, in order that when photographing small objects I could bring them nearer to one another. It was not a difficult matter to mount each lens in

a separate block, and to make these blocks move in a groove on the camera front. The Thornton-Pickard shutter has movable panels of this kind, although they do not close sufficiently together to make the shutter available for very small objects.

There are other ways, however, of taking stereoscopic photographs without the use of a large camera. Two "Scout" or "Brownie" cameras



Thornton-Pickard Shutter with Movable Panels.

fastened side by side, and with their triggers linked together so as to work simultaneously, will take excellent photographs of this special kind. And there is this distinct advantage about them, that each pair of pictures being on separate films, they can be printed in their right order upon the paper.

It may not be generally known that if a half-plate is used to receive a pair of photographs, as in the camera mentioned above, then the pictures, after having been printed, have to be reversed, the



A Country Scene.

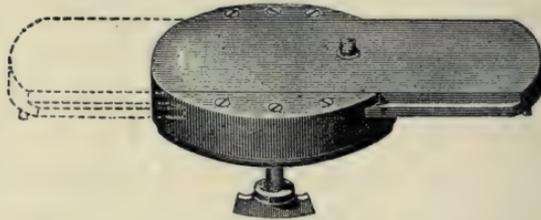
right-hand picture being placed on the left, and *vice versa*; the principal objects being mounted $2\frac{3}{4}$ inches from one another before they can be seen with effect through a stereoscope.

Another method of obtaining stereoscopic pictures is to take two negatives with the same lens, using the camera twice. For the second picture, the camera is moved $2\frac{3}{4}$ inches to the left or right, so as to obtain a slightly different view. All photographic dealers sell a small wooden top to fix upon the camera stand, called a "Stereo-Attachment," by which the camera can be moved after the first picture is taken exactly the right distance for the second. These cost about 2s. 6d. each. With this small piece of apparatus a quarter-plate camera can be used, and is available for landscapes and still-life subjects. It is obvious that it could not be used for obtaining stereopictures of living and moving objects.

By far the cheapest and most ingenious apparatus for taking every kind of stereo-photograph is the "Stereoscopic Transmitter" made by B. K. Brown. This consists of two special mirrors, hinged together, and fixed in front of the camera; so that the images reflected in the mirrors are thrown together upon the plate. The angle of inclination of the mirrors can be varied, so that they may be used for every possible subject; and most excellent stereoscopic photographs can be

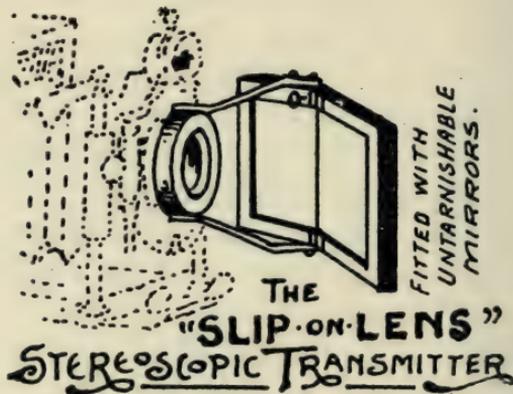
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produced by an ordinary quarter-plate camera, without any internal alteration by means of this



Houghton's Holborn Stereoscopic Attachment.

clever little instrument. There are so few manuals upon Stereoscopic Photography that I



Brown's Stereoscopic Transmitter.

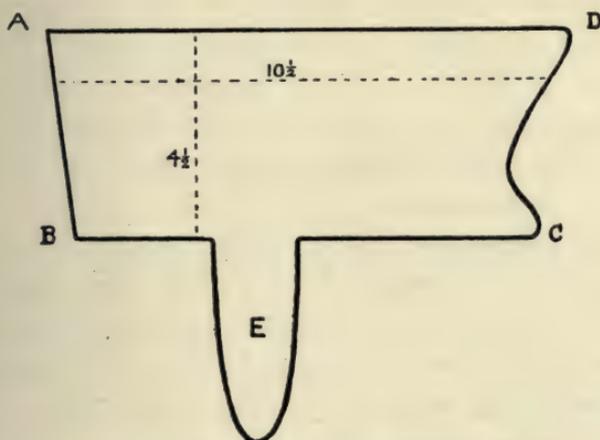
make no apology for introducing my readers to this invention. In its cheapest form it costs 7s. 6d.

HOW TO MAKE A HOME-MADE STEREOSCOPE

In order to get the effect of "relief," stereoscopic pictures must be viewed through a stereoscope.

The simplest form of stereoscope, specially useful for viewing pictures in a book, can be made as follows.

Take a piece of cardboard about 12 inches square, and cut out of it the following design.



Design for Home-made Stereoscope.

The length from A to D depends on the eyesight of the user. Ten or $10\frac{1}{2}$ inches will suit the average user, though some people may require it to be longer or shorter. The side A B is to be placed on the book between the stereoscopic pictures.

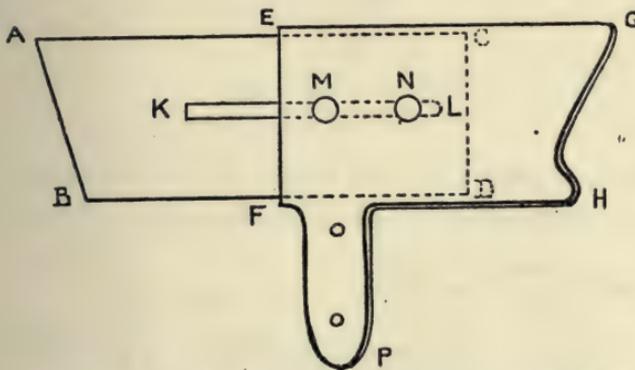
The side D C is cut to fit the nose. E is cut to form a handle by which to hold the card. It will be noticed that A B is not at right angles to B C, but slightly obtuse, for the convenience of viewing pictures in a book upon a table. The card should be covered with dull black paper both sides, and to use it, the nose should be rested in the part cut out for it, D C; the edge A B placed on the book, so that the card comes between the two eyes. The left eye will now see the left-hand picture only; the right eye, the right-hand picture; and if the card be of the right length for the eyesight, the stereoscopic effect will be seen at once. Otherwise it would be well to experiment with rectangular pieces of cardboard of different lengths until the right distance from the eyes to the picture is obtained.

This suggestion for a simple stereoscope was made a few years ago in one of the photographic papers, I believe; I regret I cannot discover to whom my acknowledgments for it should be made. The following is an improvement upon it which will suit any sight.

A B C D is a piece of cardboard $4\frac{1}{2}$ inches broad and about 12 inches long. E G H F is a second piece, cut double, and folded over, the under side just showing at G H P. The piece A B D C slides inside E F H G, a slot being cut in it at K L, and two paper fasteners M N being passed through the

slit to act as guides and to keep the doubled portion (E F H G) together. Extra paper fasteners can be put into the handle F P.

It is obvious that the length of A G can be reduced or extended by pushing the first piece A B D C in or out of the second; and so this simple contrivance may be used to fit all sights.



Improved Design for Home-made Stereoscope.

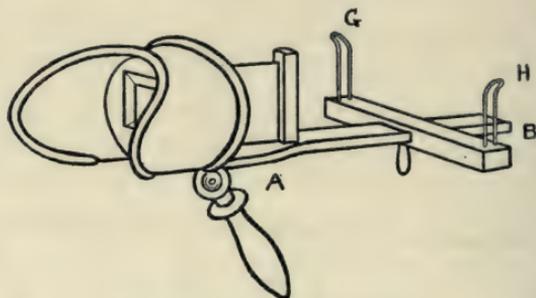
The disadvantage of this instrument is that there is no magnification of the pictures. For such a purpose a more elaborate stereoscope is required.

The well-known American form of stereoscope, costing 1s. 6d., can easily be adapted for viewing the pictures in this book.

All that is necessary is to cut a slot in A B, and provide an extra slip of wood C D, which can be made to work backwards or forwards underneath

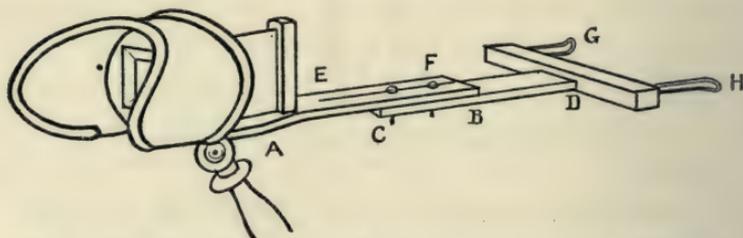
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A B by means of two screws passing through the slot. To this underpiece the carrier G H is made



Ordinary American Stereoscope.

a fixture, and the two wires G and H turned at right angles to their present position. These grip



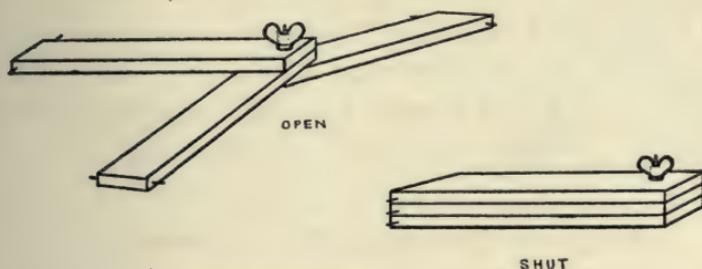
How to adapt same for looking at stereoscopic pictures in a book.

the outer edges of the book, and the sight can be adjusted by sliding the lens-holder to and from the picture, along the lower slip C D.

HOW TO MAKE A PORTABLE TENT

Mr. Westell desires me to add anything that I can with regard to the general subject of Nature

Photography beyond what is written in our two former books, and as a part of this book is specially written so as to appeal to Boy Scouts, perhaps a description of a portable tent for hiding in, when watching or photographing birds, may be acceptable. I have the folding legs of an old half-plate camera stand, which make the three supports of the tent. In place of the tripod head, I have three pieces of wood, each 10 inches long, which



Top (open and closed) for a Portable Tent.

are fastened together at one end with a bolt and butterfly nut. These can be spread out like three spokes in a wheel, and fixed firmly in any position by means of the nut. At the outer ends of these pieces I have inserted small screws to receive the eyes in the legs, so that when erected I have the frame-work of a tent 18 inches in diameter at the top, and opening out to 4 to 6 feet at the bottom.

Over this framework I fit a loose bag of green-coloured lining, and peg it down to the ground. A slit in the bag gives me an entrance; and many

tapes are sewn over the bag to which twigs and branches, etc., can be tied for the purpose of disguising the tent. The whole arrangement is very portable, folding up into a small space; and it costs very little, a few shillings at the outside.

Such a tent is useful even if the Scout is not a photographer. He can easily carry it with him on his expeditions, and erect it in a few moments wherever he wishes to make any Nature observations upon living things. When it is well-hidden in twigs and branches, or bracken, it is practically invisible. If he chooses to go to a little more expense and use canvas for the covering instead of lining, he may even use it for camping out!

HINTS ON EXPOSURE AND DEVELOPING

The only other matter upon which my attention has been specially directed is the taking and developing of Nature photographs.

I am quite sure that the best rule is "Give the longest exposure you can." Never take an instantaneous photograph unless there is no other way left. Except in well-lighted places, and during the brightest of the weather, it is impossible to obtain well-exposed negatives with instantaneous exposures unless a very expensive lens, working at an aperture such as $f/5.6$, is used. These lenses are out of the reach of most boys, and, what

is more, for Nature Study work they are really not suitable unless they are stopped down to $f/11$ or $f/16$ in order to make the picture as sharp "all over" as possible. For this reason, a cheaper lens is just as suitable, and its only disadvantage is that just mentioned, that it cannot be used for "snapshots" except in the brightest sunlight.

Therefore if you want a good negative, which will yield a good print, give as slow an exposure as you can. I confess that I aim at over-exposure almost always; because then it is possible to develop with a restrained developer, and bring out the picture quickly, and at the same time to make sure of having a good negative. If the negative is under-exposed, nothing can be done to make a good picture from it.

For developer I content myself by saying that I invariably use what is called the "Imperial Standard Developer."

No. 1

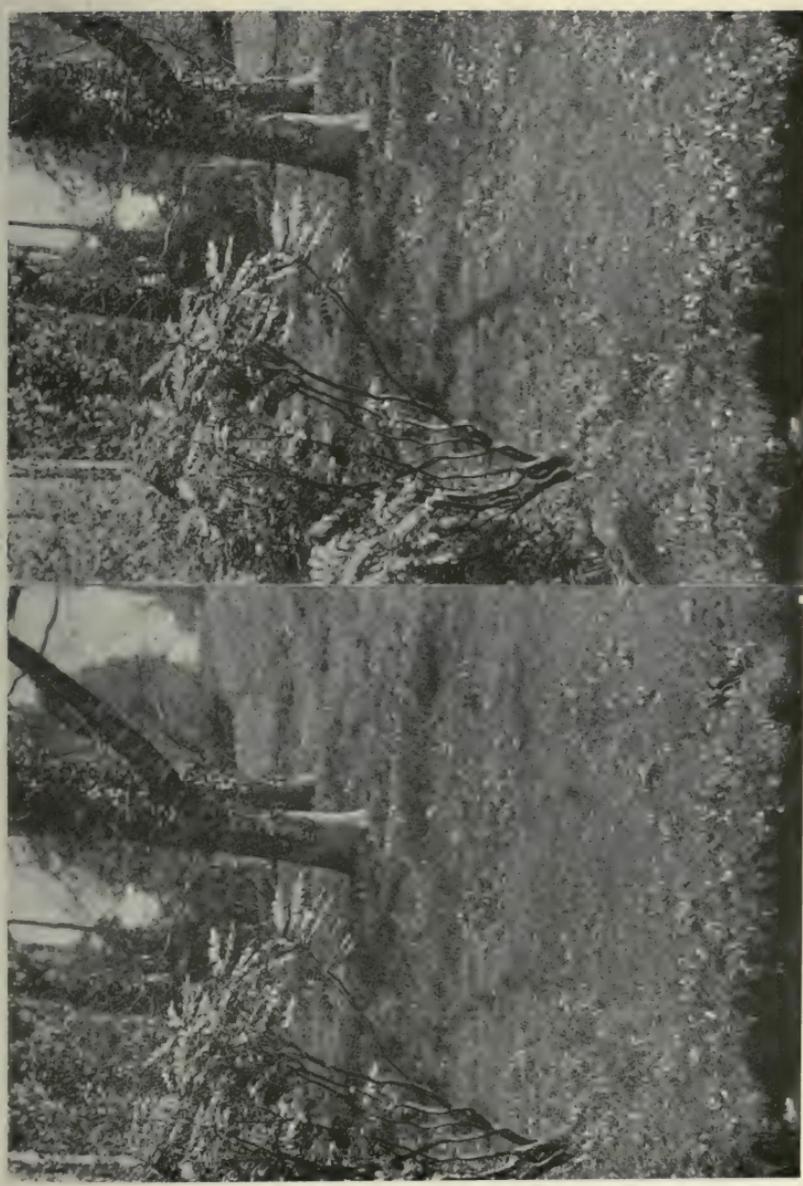
Pyrogallic Acid	. . . . .	55 gns.	.6 grms.
Metol	. . . . .	45 "	5 "
Metabisulphite of Potash	. . . . .	120 "	14 "
Bromide of Potassium	. . . . .	20 "	2 "
Water, boiled or distilled,		to 20 oz.,	1000 c.c.

No. 2

Soda Carbonate (Washing Soda)	4 oz.,	200 grms.
Water, distilled or boiled,	to 20 oz.,	1000 c.c.

If your plate has received a good exposure, or is over-exposed, take one part of No. 2, and two or three parts of No. 1, add an equal bulk of water. This will give you negatives that will be bright, full of detail, and of right density. With regard to the *length* of development I like the old bit of advice — “Go on developing until you see the principal part of the image well out on the back of the plate.”





Primroses and Anemones.

CHAPTER III

WHAT TO DO IN THE COUNTRY

ALTHOUGH, as every intelligent boy knows, there is so much to see and hear in the country, there are many people who complain that life outside of a big city is dull and uninteresting. To those, of course, who know and love Nature and her wonderful children, no time spent along the countryside is dull. Every field and hedgerow, every wood and coppice, every stream and pond, every park and garden, every piece of waste ground, every valley and hillside, has its interesting animal and vegetable inhabitants.

The fact is, many people do not, or will not, use their ears and eyes, and as I have so often written, unless one cultivates the seeing eye and the receptive ear, some other vocation than that of studying Nature had better be chosen.

People often ask me how it is possible for me to be able to tell a bird by its note; that is, by a mere little sound, not by means of a loud or long-sustained song. Very often, too, my companions cannot manage to catch the voice of a bird I

particularly wish to point out to them, and I am frequently bewildered as to what to do to put the matter right.

As to the identification of birds or of mammals, of insects or of plants, that only comes as a result of years of painstaking and loving study. Rome was not built in a day, neither does the mighty Oak tree in the forest attain its magnificence without a struggle and without years of devotion.

I remember how as a boy of six I was lifted up by my grandfather into a hedgerow to peep inside a nest of the Hedge Sparrow. How I revelled at a sight of the bright blue eggs! I have had, too, a warm place in my affections for this bird ever since those boyhood days, and have ever striven to obtain as much information as I could by making personal acquaintance with wild animals and plants.

And yet, in spite of all the books that have been written, lectures delivered, lessons taught, and museums erected, there is a tremendous amount of ignorance existing both in country and town concerning wild creatures.

Those of you who have read *The Boy's Own Nature Book* will remember that in one of the earlier chapters there was included a number of curious "howlers" sent in by schoolchildren in response to Natural History questions that had been asked them. Now I have before me some more "howlers" by schoolboys, and as these are

given in the pages of *The University Correspondent*, I presume their authenticity is vouched for.

Even if you did have to kill a Butterfly I guess there is not one of you who would "pinch its borax," and if you were asked to describe what blood-vessels are you would never reply, "Please, sir, blood-vessels are the veins, arteries, and artilleries!"

Then again, if I asked you, "What is a ruminating animal?" would you reply, that it is one "that chews its cubs"? You would surely, too, be well aware that Algebra was not the wife of Euclid, and that the masculine of Vixen is most certainly not Vicar! Yet these are some recent howlers by schoolboys, which I hope will be a warning to my readers to guard against.

Unfortunately a great deal of destruction is still carried on in the country among both animals and plants, and perhaps a better title for some parts of this chapter would have been "What *not* to do in the country!" For instance, I knew of some boys recently who could find nothing better to do than procure a young Blackbird and throw it at one another until the poor little bird was emaciated and torn almost to death. Fortunately it was rescued from them by a kind old gentleman of my acquaintance, but all efforts to revive the wee mite were of no avail, and at last it dropped its little head and breathed its last.

Now what boy with any feeling within him could be thus cruel? What good is to be obtained by so doing, and can there possibly be any real pleasure in causing pain, and eventually death, to the offspring of one of the most beautiful song-birds we have in this country?

I met a boy the other day who was passing the time by kicking some beautiful yellow flowers of the Hawkweed. He continued kicking in spite of my suddenly confronting him, until I asked sharply, "What are you doing that for?" He sulked at first, afterwards he was inclined to be cheeky and impudent, but at last, when I told him that the flower had a mission to fulfil, that it was as much entitled to live as he was, and that I considered the flower far prettier than him, the boy repented and promised never to destroy a flower again. I wonder if he will keep his word?

This last Spring and Summer, too, I have been much disheartened at the number of nests that I have found robbed of their treasures, and the homesteads wilfully lugged. Sorry, too, am I to admit that this practice is not restricted to school-boys; but gangs of hooligans, who take a sheer delight in striking terror wherever they go, are also largely responsible. Not only is much harm thus perpetrated, and the pleasure of hearing or seeing an animal put a stop to, but it is possible that some keen young naturalist was watching



Mute Swans.



Wild Duck in Farmyard.



Young Rook.



How many Chicks?

the bird or its nest, making important notes concerning it, and anxiously anticipating the time when each note would go to make up an interesting story. Alas! one day when the nest was visited it was gone, ruthlessly torn asunder, and lay upon the ground in fragments—a mere remnant of a bird's beautiful handiwork.

How pleasant it is when one can rely on finding a certain animal or plant where no harm befalls! Thus this year a friend tells me he has found the Pied Flycatcher nesting again *for the third year in the same tree*, and a Willow Wren, returned from across the seas, building its nest *within a yard of the site occupied on two previous occasions*. On the other hand, the same observer reports that early in May he found twenty-three nests in two days, and these he specially noted down so that he might return another day and take photographs of them.

Judge, then, of his surprise and keen disappointment when it was found that only three nests *out of the twenty-three* remained intact! As my correspondent truly says, it is heartrending to come into contact with such destruction.

Let us pass on to pleasanter topics.

In the last book in this series I was fortunate enough to be able to give—and I am sure to the great delight and enjoyment of a large number of children—long extracts from a letter written by

Mrs. Barnett in connection with the Children's Country Holidays Fund. This year I am again under an obligation both to Mrs. Barnett and the Countryside Committee of the Fund for permission to use the last letter recently issued to the children.

It so happened that I was privileged to see an advance copy of this really delightful letter, and I was so charmed with its contents that I at once thought how nice it would be to incorporate it in this chapter, indeed the letter and its contents suggested in reality the title of the chapter to me.

With that kindness which she shows towards any good cause Mrs. Barnett at once interested herself in the matter, and the consent of the Committee having been obtained, all was plain sailing. It only remains for me to emphasise my deep obligation to those responsible for the conduct of this most deserving Fund for their kindness in permitting me to use the letter in this book. Here is the letter:—

MY DEAR CHILDREN,—The holidays will soon be here again, and I hope that during your stay in the country the weather will be as fine as it was last year.

I must thank you all for your nice letters. While reading them I felt that many of you were

learning to make good use of your eyes and ears. Go on making use of them, dear children, not only during your holidays, but all the year round. There is more to learn about in this wonderful world of ours than the cleverest person can manage in a lifetime.

I was pleased that you all found out that "Scarlet Pimpernel" was the other name for the "Poor Man's Weather Glass"; also that you were able to tell me that some Ladybirds had black and yellow cloaks as well as red ones, and that the number of spots on the cloaks was not always the same.

You were not all agreed as to why Sheep do not feed near a Rabbit-hole. I believe the real answer is that the Sheep do not like the smell of the Rabbits. Some of you said that the Rabbit-holes were all sandy outside and so there was no grass for the Sheep to feed on. That is quite true of some Rabbit-holes, but not all. Sometimes from the inside of his burrow Bunny wants to make a new opening to the outside air. He begins to dig by throwing the earth backwards with his hind legs, and when he has finished there is no sand at the outside of *that* hole. At other times he makes a new entrance from the outside, and then it is that he strews the ground outside the hole with the earth thrown backwards.

I think every one of you found out that the

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bursting seed boxes on the Furze caused the cracking sound I mentioned. It pleased me very much to know you had done so.

One of you told me that you picked up a twig with a bud at the end covered with sticky stuff, and you wondered why it was so covered. This sticky bud had still on its Winter waterproof coat, which many Winter leaf buds wear to protect them from the rain and snow and frost.

The Horse Chestnut has a very sticky Winter coat lined with wool to protect the tender baby shoot within from being frozen or frost-bitten. As soon as the Spring comes, the warm sun melts the sticky stuff, and the scales which form the Winter coat open and finally drop off. The baby shoot then shakes out its leaves and soon grows to a large branch.

Just as the Winter buds are opening the Bees begin to be very busy. They make a thorough inspection of their hives, to repair and spring-clean them as we do our houses. Sometimes they find a crack or crevice which needs mending, and at once some of them fly off to the Winter buds and gather some of the sticky stuff, which they use just as a cyclist uses rubber solution to mend a puncture.

Those of you who have been in the country before must help those who are going for the first time. Take them to the fields and woods and

hedgerows; then show them the likely places to find flowers.

I wonder if you will ever love the country, and especially the hedgerows, as much as I do. Hedgerows are very old-fashioned, for it was our Saxon forefathers who planted the first English hedgerows. You read about the Saxons in your history books at school, don't you? One shrub (a shrub is a low-growing bush or tree) which the Saxons used for making hedges they called the Hedge Thorn; now we call it the Hawthorn or May. You all know the May with its white scented flowers. It is still used for making hedges. After the white flowers are gone red berries come in their place—the red berries are called haws, and the birds love to eat haws after the frost has touched them and made them sweet and juicy.

Wild Rose trees, and Brambles from which you gather blackberries, are also favourites with the farmers for making hedges, because they grow quickly and make a good deal of new wood each year. Many farmers have the hedges trimmed each Spring to make them grow quickly. I wonder if you could find out for me what other shrubs are growing in the hedgerows in that part of the country where you spend your holiday?

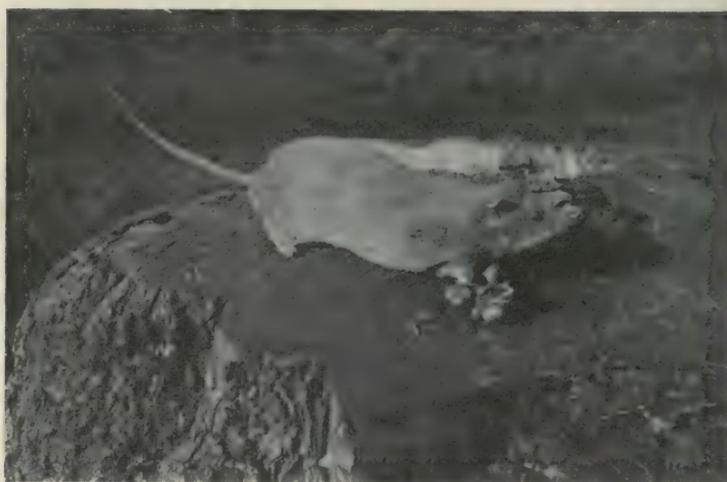
Many of our most timid birds, too, love the hedgerows, because they feel they can hide their nests in them, and there bring up their families in

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safety. Besides this, birds can find plenty of food, like caterpillars and insects, among the shrubs. Notice how many wild flowers creep under the shelter of the hedgerows. The very first rose of the year—the Primrose—will be found earliest on a sunny hedge bank, and during the months that follow comes a whole procession of Spring and Summer flowers.

Some plants cannot live except in the hedgerows. They are those wild plants with thin weak stems, which climb up the hedgerow-bushes and hang their flowers and berries over them, until, sometimes, the hedge bushes are almost hidden by the climbers. These slender plants have different ways of climbing. Some catch hold and pull themselves up by hooks; some throw out long thin fingers, or tendrils, and twine themselves round the hedge bushes, and so clamber along from branch to branch. Will you look carefully at the different climbing plants you see and tell how each one lifts itself up higher and higher on the hedgerows? If you can find out their names so much the better. If not, never mind. Tell me how they climb and I shall know the names.

I am afraid you will not hear many song birds, for July and August are their silent months. However, you will be sure to hear the Robin's pretty little trill, the Wood Pigeon's soft coo-o-o, and the bree-e-eze of the Greenfinch uttered



An Old Rat.



Brown Rat.



Dormouse.

slowly and solemnly. If you learn to distinguish the notes of these three birds that will be great knowledge gained.

You might try and learn how some of the birds fly. Notice the difference between the flight of the Sparrow and the Swallow.

Rooks and Starlings in the Summer time seem very fond of each other, and fly about together in great numbers; at night time, when they are coming home to rest, the Rooks look like a long black stream across the sky, while the Starlings fly together in groups. Rooks are terribly afraid of a gun. If you point your umbrella at a stream of Rooks flying high above your head, they will scatter at once. This also tells us what splendid sight birds have.

Should you chance to startle a Squirrel, so that he bounds away and up the trunk of a tree, stand perfectly quiet and watch. He will be sure to come back to have a look at you, perhaps from a high branch of the tree. If you keep still long enough he may forget all about you and come down to finish whatever he was doing when you startled him. When he runs along the ground he leaps like a Rabbit. Bunny leaps with his tail turned up; the Squirrel leaps with his tail down. As soon, however, as the Squirrel sits down to rest or eat, up goes his bushy tail right over his back.

Never forget to watch the Bees. You can always see Bees wherever there are flowers. Notice the black sword-like tongue as it dips down into the honey-pots of the flowers. Bees don't need to be told where the flowers store their honey.

Pick off one of the golden petals of the Buttercups and look at the pointed end where the petal was joined on. You will see, and you can feel also, a little knob. That little raised knob forms the honey-basket, and if the Buttercup has five petals there will be five honey-baskets in that one Buttercup, and the Bee will make five dips with its tongue before it leaves the flower.

You all know how Bees, besides sipping the honey, gather pollen-dust from the flowers. After gathering it they make it into two little golden balls and pack it into two hairy pollen baskets which they carry on one pair of their legs. Now I want you to watch and see if you can tell me on which pair (for it is only on one pair of the Bee's legs) these pollen baskets are.

Sometimes Bees go out specially to gather pollen, and if you use your eyes you will be sure to see a pollen-gathering Bee who looks as if it had on yellow knickerbockers. If a Bee pops its head into a flower in which there is another creature, perhaps an Earwig, it will withdraw at once, give an astonished hum as much as to say, "Well, I

never," and then most likely leave the whole plant and fly to the next.

Earwigs love to get into the bottom of a flower among the honey-pots. They also eat the dainty flower petals and spoil the blossoms, and this makes the gardeners dislike Earwigs very much. No one has a good word to say for Earwigs, but the old story that they creep into people's ears and send them mad is all nonsense. The Earwig is so harmless that it can't even hurt you with its nippers.

Did you know that Earwigs had wings and can fly? Look carefully at an Earwig and you will see on its back two tiny horny wing-cases, each the shape of an ear.

Some people say that the proper name of the "Earwig" is "Ear Wing," because of the shape of the wing-cases. Under the wing-cases are two large gauzy wings, tucked away in a marvellous manner. When the Earwig settles after flying, it turns its nippers over its back, and with them tucks away out of sight its gauzy wings.

Some hot afternoon, when you are sitting resting on the grass, watch for the pretty bronze Beetles as they come out of, and disappear into, cracks in the earth. Whatever you do, don't kill one. Ask your country friends what they believe will happen if you kill a Sun Beetle.

At the same time you may hear and see some

Grasshoppers. What a big jump they can make! They chirp most when the hot sun is streaming down on them. The chirp is caused by the Grasshopper using the edge of the wing as a fiddle string, and his leg as a fiddle bow.

There is a very beautiful tree I want you to notice. It has graceful hanging branches and rather small leaves, which twinkle, twinkle, as the wind stirs them. It is such a graceful tree that it is known as the "Lady of the Woods." On its trunk the outer bark sometimes peels and rolls up and looks like silvery tissue paper. Will you try and find out its ordinary name?

I should like you also to look well at a leaf from an Elm tree, and tell me in what way it is different from most other leaves.

Of course you all know an Ant when you see one, and I'm sure you have read about their making little hillocks called Ant-hills, sometimes in the woods, sometimes on the commons. Now there's a sweet-scented little flower that likes to grow on those Ant-hills on the commons. It has tiny purple flowers which grow in bunches, very small but scented leaves, and woody stalks which are rather tough. Have you ever found this flower?

Perhaps you could find out for me other plants which have their leaves scented as well as their flowers.

Some of our country holidays boys found some fossils and drew them for me, which pleased me very much. Those of you who do not know what a fossil is must ask your teacher to tell you. It would take too much space for me in this letter. Sometimes you may find fossils among the stones with which the country roads are mended, but it takes a sharp eye to detect a fossil from an ordinary stone.

Speaking of fossils makes me think of the rounded pebbles and stones which strew the fields and pathways. Now stones are just pieces of hard rocks, and when first broken off they are all edges and sharp corners. I wonder if any of you are clever enough to tell me how it is that the corners have all been rubbed off and the pieces of rock made into these common rounded stones.

Don't forget to rise early in the morning to watch the sun come up, and see the dew on the grass, and the cobwebs in the garden or the hedge-rows. If you are up late enough watch the moon rise, and the stars twinkle out one by one as the twilight deepens. These sights will make pleasant memories for you in years to come, when you are grown men and women.

Young trees are called saplings, and certain saplings are often planted very close together for a particular purpose. Each young tree feels it must have plenty of light and fresh air, and so

does its best to shoot straight up and grow stronger than its neighbour. Each tree seems to know that if it lets the others get above it, and so exclude the light and fresh air, it will sicken and die, so there is a continual struggle to grow up, up into the light. When these trees are full grown they have long straight trunks and are used for the masts of ships, for telegraph poles, and flag-staffs.

Take a lesson from these trees and get out into the fresh air all you can. Never stay indoors when it is possible for you to be out in the open; for fresh air is even more necessary for you and me than it is for the trees.

Remember that we, too, must grow up, up into the light of knowledge and the sunshine of kind deeds, because the more we know of the living things about us, the kinder and better we shall be to one another.

Now goodbye, dear children.—I am, your friend,

HENRIETTA O. BARNETT.

(Signed on behalf of the Countryside Committee of the Children's Country Holidays Fund.)



SOME MEADOW GRASSES.

A. COMMON CAT'S TAIL GRASS. B. MEADOW SOFT GRASS. C. COMMON FOX TAIL GRASS.

CHAPTER IV

HOW TO KNOW YOUR COUNTRY

IN the last chapter notes have been given as to what to do in the country, and we may follow up that section by offering a few suggestions as to how to set to work so as to know your country.

From a geological, historical, and many other points of view England is a really wonderful land, and although we all of us learned at school whole strings of dates about Kings and Queens and eminent men and women, or of remarkable episodes and events that have taken place in the past, there is a dry-as-dust element about these which is apt to result in much of the information being forgotten.

When you visit a certain neighbourhood, I should like you to make a point of finding out the general formation of the district, its historical and geographical associations, and any other details likely to be of interest.

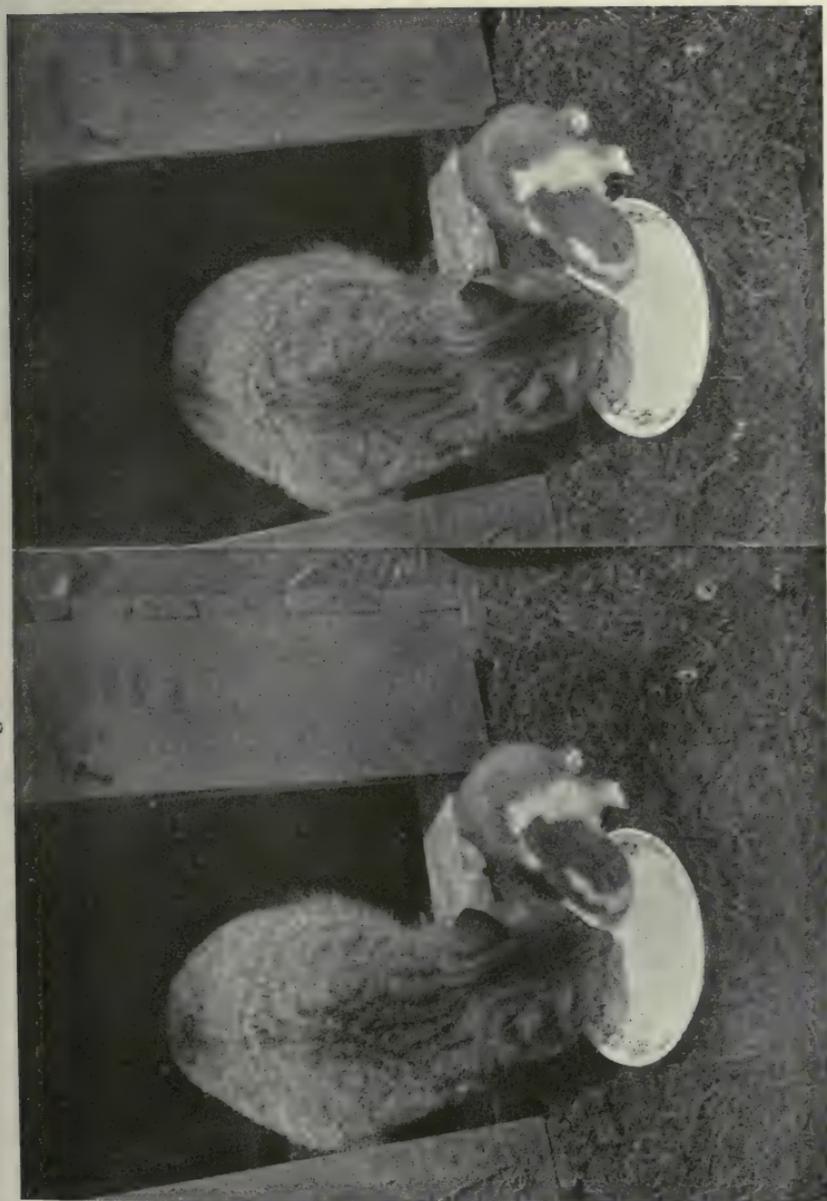
Suppose, for example, you strike a stream or a pond. If it be the first named, do not rest content until you have ascertained its source, for the mighty river is only formed by degrees and does

not rush headlong out of the ground and form a navigable waterway without gathering strength as it proceeds.

Trace the beginning of the stream if you can from its first commencement and follow it from the time when it is a baby brook until, joined by others of its fellows, it assumes the form of a wide, deep river, and follow it up until you reach the point where it flows into the sea. You may not, of course, be able to personally follow the whole length of the waterway, but by the aid of a good map it should not be difficult for you to ascertain from whence it comes, where it goes to, and the direction it takes.

By making careful inquiries you will be able to ascertain that some modest streams of to-day were in bygone years important waterways that were largely utilised for transit purposes before the scream of the railway engine whistle was heard in our land, and at a time when barges and road coaches held undisputed sway. I know, for example, a sleepy little country town which once upon a time was a most important and flourishing city. There is to-day a fair-sized river there, but in past days it was much mightier than it is now, and most of our coal was brought inland by its means to this sleepy little town of the twentieth century.

The advent of railways sounded the death-knell



A Kind Foster Mother (Cat and Rabbit).

of several things, and among them the river I have in mind was to be numbered. As a result of the stoppage in shipping the waterway came into disuse, the river was allowed to assume a wild, untended state; wild plants and trees commenced to flourish by its banks, animals made their homes by its hospitable shores, and at last it was difficult in some parts to discern really where the river was!

But it is not only to our streams, rivers, canals, brooks, and ponds that the attention of the boy who wishes to know something of his country may be directed, for he will find ample opportunity for study even in the formation and colour of the land of a given district. Some parts of England are flat (Cambridgeshire and Lincolnshire for example); some parts are hilly (the neighbourhood of the Downs, for instance); some are sparsely wooded; others (like Hampshire, Surrey, Kent, and Hertfordshire) are noted for their wealth of woods, coppices, and tree-laden hedgerows and fields.

To reason out the why and wherefore of this variety will afford interesting and extremely valuable information for the seeking, and many points will crop up at unexpected moments that go to make the quest exciting.

Should you find hollow ground, endeavour to ascertain why it is hollow even although it is only

a disused gravel, chalk, or clay pit grown over by wild plants and so disguising it.

Should you come across a small hill or rising ground of any kind, or of terraces, probe into their hidden secrets and learn to read something interesting about your country which these epitaphs are only waiting to give.

You know, of course, that once upon a time the Romans under the great Julius Cæsar invaded this country of ours. They came across the English Channel and sighted the white cliffs of Kent. The ancient Britons saw them coming and prepared to give them a warm reception, but the all-conquering Cæsar and his Roman legions were too powerful, and England was proclaimed as coming under Roman government. Two capitals were established—York in the North and Verulam (near what is now St. Albans) in the South—and although we cannot stay here to describe the stirring events of that and succeeding periods in our history, these Romans, and ancient Britons, and Danes, and French, and others have left behind them burying grounds (tumuli), encampments, fortresses, habitations, implements (household, warlike, and otherwise), coins, and other interesting data which has enabled us to piece together the story of our country.

Not long since I was walking down a country lane in a district which I knew from repute had been

inhabited in the long, long ago by the Romans. I saw the site of a beautiful Roman Villa which was once unearthed, and examined a carefully executed plan of it. I could discern the old Roman Road even although it passed now through a waving field of corn, which was glowing brown in the Autumn sunshine, and showing a peaceful countryside picture far different to the stirring episodes which must have taken place near by in what we sometimes call "the good old days!"

And then a curious thing happened, for I chanced to have handed to me a coin picked up in this same lane, and what do you think it was? It was a small brass coin of the Emperor Victorinus, who reigned only one year in A.D. 267; thus the little stranger (about the size of our present farthing) was some 1640 years old and was still in splendid preservation.

This is, however, only one of many, many instances of how one may come to learn something of their country and realise the true history of the land in which we live and which we should all be ready to defend.

If you ever visit the Chiltern Hills, try and realise what stirring times must have been enacted when the beacon fires burned brightly on the highest points and so proclaimed to those who could see them tidings of good or ill, and endeavour to conjure up in your mind the heroic

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deeds of our forefathers in fighting for our liberty and paving a way for our present prosperity.

The whole countryside teems with information if only it is sought after aright. The hill, the valley, the stream, the lush meadows, the waving cornfield, the old road, historic buildings of many kinds, the soil below, the animals and plants, the influence of our climate on human progress, all these help to piece together a story as redolent as romance, but true every word of it.

There is no need to read exciting adventures by some unreal romancer, for the history of our own little sea-girt isle is simply teeming with interesting and valuable information that may be had for the seeking. This is *the way to know* your country, for by such means you will realise more fully and personally what it is and what it has been, as well as the place you yourself occupy, and you will become, if I mistake not, so enamoured of the epitaphs that surround you concerning your own land that you will, should occasion demand it, be one of the first to defend it and respond to the noble call of duty.





A Boy Scout Stalking.

CHAPTER V

THE BOY SCOUT AS I SHOULD LIKE TO KNOW HIM

It is not my intention in this chapter to go into the question of scouting for boys. That, to say the least, would be beyond the province of this book, added to which is the fact that General Baden-Powell has already, in his admirable book, *Scouting for Boys*, catered for Scouts in a manner calculated to stir up patriotism in every Britisher.

My aim is to address a few words to Boy Scouts so far as concerns the wild animals and plants of the countryside, and to present some ideas which I possess concerning the Boy Scout as I should like to know him.

Among the many young people whom I am pleased to number among my friends, there are not a few who belong to the Boy Scouts' organisation, and whilst some of these appear to me to carry out their duties to the letter, there are others who exhibit much room for improvement.

The members of one particular corps of Boy Scouts with which I am acquainted take a keen delight in stalking wild creatures quietly and unobtrusively, learning all they can of both animals

and plants, taking note of the formation of the country they frequent, and behaving themselves generally in a manner that cannot fail to arouse admiration.

They carry out, so far as I am able to judge, the rules and regulations of the organisation to which they belong, and endeavour to be what they desire to appear, namely, good citizens.

There are, however, other Scouts known to me whose mode of carrying out their work would, I feel sure, not meet with the approval of the General who formed this remarkably successful organisation, and perhaps the less I write in regard to them the better. They do not appear to carry out any method worthy of the name, but career about the countryside in a haphazard manner and are a nuisance to all who come in contact with them.

Armed with their staffs they set off in a frenzied gallop across country, frightening every animal within sound of their lusty voices and noisy movements, and trampling underfoot the nests of ground-building birds, plants, and other treasures of the countryside. Now as I understand General Baden-Powell's wishes regarding the Boy Scout, he should be an intelligent, observant, and law-abiding citizen. He should exhibit courage, obedience, a sense of duty, a love for animals and plants, respect for his superiors, a knowledge of his country, of tracking, and of scouting;

he should endeavour to be of service to any one desiring help, and enter into a sacred pledge to perform a kind action at least once each day.

The Boy Scout as I should like to know him should be a boy with a smiling face; he should be a regular handy man, kind and considerate in all things, abstemious and regular in habits, of equal temperament, patriotic to a degree, and thrifty; he should possess ambition, be industrious and painstaking, loyal, and well disciplined; one who can face difficulties and dangers with a light heart, as did the hero of Mafeking.

The Boy Scout as I should like to know him should be unselfish and mindful of others; he should possess ideas, a knowledge of camping and making useful articles; play cricket, football, and other games; learn the useful art of swimming and rendering first-aid; he should not be indolent nor a loafer; he should be tidy and methodical, and when the time arrives for him to choose a career should make tracks for a definite goal which, if steadfastly worked for, will as surely be attained.

The true Boy Scout should be courteous, well-spoken, chivalrous, friendly, generous, neatly dressed, cleanly, an early riser, a stickler for fair play; he should be acquainted with fortitude, good temper, honour, and cheerfulness; make himself an adept at woodcraft; and learn to know

the uses of animals and plants, their habits and winning ways; he should not consider anything too trifling or of little account, or trust to luck to enable him to climb the ladder of life. He should practise memorising things and events; make himself intimately associated with the history of his country; endeavour to cultivate his spare time pleasantly and profitably; pay attention to his physique; lead where others refuse to go forward; and last, but by no means least, be so prepared that should such time arrive he will be well able to defend his King and country.

Yet, the reader may say, *boys will be boys*; so let them be, but there is all the difference in the world between an indolent, ill-caring youth, and one who endeavours to be a real boy, full of pluck and daring, and yet at the same time a little gentleman.

There is a splendid work to be done by the Boy Scout that I should like to know even regarding the protection and preservation of places and objects of historic interest, and of animals and plants. To animals my ideal Boy Scout would invariably be kind and humane. He would not be frightened at the sight of a Spider, or utter exclamations of disgust when our friend the harmless Toad is encountered. Robbing birds' nests and despoiling the countryside of some of its rarest treasures, sticking a horrid pin through a



Eggs placed on Leaf.



Larva and Pupæ.



Emergence.



Adult Butterfly full spread.

LIFE HISTORY OF SPECKLED WOOD BUTTERFLY.

Moth or Butterfly, and indiscriminate collecting should be unknown, and the real Scout should make it one of the golden rules of his life to note the appearance of animals and plants, the contour of the country, the condition of the weather, and other phenomena.

Why, I wonder what boy has ever thought for one brief moment what we owe to dust? Our very existence depends very largely upon it, and the beautiful effects of sunrise and sunset are caused by the presence of tiny particles of dust in the air.

To the boy who reads these lines I would say, young man, yours is a sacred heritage; you have the power within you to be of service to your country and mankind. You have the opportunity of letting those around you see how easy it is to do right and how difficult it is to do wrong, and although you may perhaps consider that in your own individual case it does not matter, come good, come ill, you must remember that it is the little things that count. The small Beechnut grows into the huge Forest tree; the tiny egg of the Silkworm Moth at last evolves into a wonderful chrysalis, and a cocoon is spun which is encased with valuable silk that is largely used as an article of commerce; and the baby brook gathers strength as it pursues its course, and at length becomes a mighty river ere it reaches the open sea.

It is a good plan to take notice of common

things, and let me illustrate my meaning by a few notes from my own memory box.

I always think it is a revelation to wander in a wood during July, and to notice how still and listless everything is. The bustle and excitement of Spring and early Summer are then over; most birds have safely reared their young in the family nursery, and the fledglings are already growing into big birds. The Cuckoo has ceased to call, and the Nightingale has ceased to sing to us. How very short the Spring always appears to be! It seems but yesterday we were anticipating the first little Chiff Chaff from over the seas, and in two months' time from July nearly all our Summer migrants will have vanished! July, however, is a good time of the year to ramble by some pond or stream, and note the wild life astir there; but before we leave the subject of the woodland I want to tell you something about the Fir tree, for there is a quaint legend told about it, the moral of which we might well take to heart.

The Fir, it appears, was dissatisfied with its needles, and prayed to the spirit of the woods that it might be as other trees. The prayer was answered, and lo! our Fir was decked in the daintiest and smoothest of leaves. Alas, for its pride! Ere it became accustomed to its new apparel, the beautiful leaves were either eaten by goats or destroyed by insects.

Nothing daunted, the Fir prayed again: "Sweet Spirit of the Woods, grant that my leaves may be of glass, and then shall I be content." Scarcely were the words uttered, than the tree glittered and sparkled with its new burden, only to discover that it was at the mercy of the stormy winds, which cracked and scattered its brittle finery.

"Hear me yet this once," pleaded the Fir, "and make my leaves of gold." Once again the desired transformation took place; but what woodsman could resist taking toll from a tree whose leaves were so rare and precious?

Then, indeed, did the Fir learn its lesson, and never again was it heard to complain of its strange but useful leaves, for it realised that a wiser mind than its own had ordained that these things should be.

In the deep pools by the river you may see a somewhat dark, green-coloured fish, prominently banded on the back and sides, with a prickly fin on the back which penetrates the skin sharper than a needle, and rich red fins below. It is fond of travelling about in shoals, is a very voracious feeder, and affords fine sport to the angler who loves to go a-fishing. This, then, is the Perch. Several years ago now I used to be an ardent fisherman, but I want to let you into a little secret, if you promise to keep it to yourselves! I now prefer *watching* the fish rather than *catching*

them, and must say that, as a result, I obtain far more real pleasure than I did before.

I remember, too, as a boy—ah, and a long time after I was a boy!—thrusting my arm into the water to secure the larva, or caterpillar, of the Caddis Fly, wherewith to bait my hook and lure the Roach, Dace, and Gudgeon. In those days I am afraid I had not cut my wisdom teeth, and was not nearly so interested in the *life history* of insects and fishes and other creatures as I am to-day. I certainly always loved the birds on the bank. I liked to watch the Kingfisher darting by, and the Swallows skimming over the water all day long; but I must plead guilty to the fact that beyond the Caddis Fly larva serving me for bait, I did not stop to inquire any more about it. And yet, when we do stay to notice it, what a wonderful little story is revealed to us!

Just look at the homes of the larvæ when you next have an opportunity. Is it not remarkable that a mere grub should, by its own industry and perseverance, manage to build such a nice snug little house in which it can shield its soft body from enemies, and live until such time as it emerges as the perfect Caddis Fly?

These houses of the Caddis Fly larvæ are of various kinds according to the species responsible for their construction. One kind builds a home of pieces of stick; another uses sand, small stones,

and little shells; another utilises dead leaves, and several seem to be very fond of ornamenting the front door with a shell of some small Fresh-water mollusc.

By thrusting the head and legs out of the case, this tiny creature is able to move along, but when the time comes for it to pass into a chrysalis, it closes the front door and sleeps.

Secure inside the chamber, naught disturbs the little slumberer. The river rushes on towards the sea in a scamper; it has no time to stay and caress the blue Forget-me-nots, nor the flaring purple of the sentinel-like Loosestrife, nor the Brooklime, nor the aromatic Water-mint; and the river disturbs not the pupa of the Caddis Fly, which has attached itself to an old post, stick, stone, or other anchorage. There it rests, and inside the chamber a great change is taking place, slowly but surely, until at last, the great deed accomplished, the insect slumberer comes forth triumphant as the perfect Caddis Fly, a testimony to the interesting story it has so wonderfully revealed. And do you wonder that, knowing this, I fish no more?

One more little incident that came to my notice not long since may also interest you before I bring this chapter to a close. It tells of a little drop of water I once saw. Here is the story taken direct from my Nature notebook.

As I came through the coppice and across the sunlit Common Spring seemed very near and very beautiful. Although there had been a hard white frost during the night, the sunshine had dispersed the rime from the trees and bushes and surrounding herbage; and now, where the sunlight caught them, the melted water-drops were sparkling like so many liquid gems.

The recollection of one particularly brilliant drop will not be readily effaced, for, as the rays of the sun played upon it, the effect was magical. First a light green colour, somewhat like the moving radiance given off by that insect-lamp-lighter, the Glow Worm; then, a second or two later, a brilliant coppery-orange, which one might expect to see upon the dress of some Eastern potentate; then pure silver, and next green again.

The water-drop shimmered in the sunbeams; each moment its symmetry was changing, each moment as it twinkled it was disappearing before my eyes. What ineffable loveliness in even a little drop of water when viewed under the conditions I mention! Its form and colour are greatly enhanced if looked at through a field glass, and several persons who chanced to pass me as I watched the little drop wondered, no doubt, what I found of interest in a Hawthorn bush denuded of foliage and revealing to their eyes only naked twigs, sombre, dark, and inanimate. Ah! if the

world did but know more of some of Nature's hidden secrets, how much better we should all be; for, if we stop to inquire, there is much to look at and learn even of the water-drop upon the Hawthorn twig.

Was it the brilliant effect of the liquid gem alone which made one stop and wonder and admire? Did that little drop of melted hoar frost, which was quickly returning to the air from which it had recently been captured and riveted to the Hawthorn twig, happen to catch my eye only to remind me of the world's loveliness and preach to me a living sermon, or was it there to serve any other purpose or proclaim any other message?

Let us approach the bush and examine the various branches. Each twig is tenanted by many water-drops, giving a necklace-like effect, as of silver beads. We had first chanced to see, owing to the distance, only one of the many little liquid diamonds, and the particular one upon which the sunlight was playing with such effect attracted our chief attention. The others did not portray the prismatic beauty of the one which caught our line of sight, and which the sunshine caressed in such a charming way. Now, having come close to the bush, we find that it bears many hundreds of the water-drops, each one having anchored itself against a little notch, which, on examination, reveals the spot from which the leaf

and floral organs will spring. The youthful sap has not yet risen to any height in the bush. If we could go below ground among the root fairies we might find a great commotion taking place, the summons having already gone forth that the resurrection of the sap shall be celebrated.

But the water-drops, what are they doing meanwhile upon the flower and leaf buds hidden in their midst, and at present just showing a trace of pinkish-red, evidence enough of returning life? Are they there to nourish the vegetable treasures to which they have become attached? Each bud that is so lovingly caressed by the melted water-drop performs a good and useful service to the tree, or bush, or tiny plant; for all require food, and light, and air, and warmth. Vegetable growths are not the dull, inanimate things some people imagine, but living parts of the great universe, sometimes clothed soberly and unobtrusively, at others in all the colours of the rainbow.

Later, look at our Hawthorn bush again. 'Tis May-time, and whilst we have been staying to moralise, Spring has appeared and gone, and left Summer in possession. The bush is now festooned with a succession of foamy billows of a whiteness pure as a virgin's robe, and who shall say that the little water-drop which we examined earlier in the year did not help very largely to build up one of the jewels now adorning the Hawthorn's crown?



Three Larvæ among Lichen.



Spider Spinning.



Insects on Leaves ; examples of protective form and colour.

CHAPTER VI

THE STUDY OF ANIMAL LIFE

I. NATURE STUDY AND EDUCATION — WHAT IS NATURE STUDY?—THE STORY OF THE FROG—THE VALUE OF STUDYING ENVIRONMENT

Nature Study and Education.—To those who, like the writer, have studied wild animals and plants for many years, it is pleasant to recognise that Nature Study has now been introduced into the curriculum of every school worthy of the name. Hitherto—at least so it appears to me—the most elementary scientific truths have been dealt with in a very dry-as-dust and matter-of-fact way, and I am bound to admit that even to-day much that is known as “Nature Study” is more so-called than real. Some teach Botany, some Chemistry; some deal with various kinds of animals, such as Mammals, Birds, Reptiles, Amphibians, Fishes, Insects, etc., but these, when treated alone, and divorced from each other in a manner that to the field naturalist is difficult to comprehend, cannot accurately convey any presentable idea of the real reflection that ensues as a result of holding the mirror up to Nature.

What is Nature Study?—This leads on to the

question, What is Nature Study? Opinions may, and probably do, differ very largely, but we may well ask, does Nature Study consist of teaching Botany, or Ornithology, or Mammalogy, or Entomology, or Conchology, or any other branch of Natural Science? Is it not a fact that now science has become very homogeneous a great deal of the work connected with various branches has *united* them in a more intimate manner than formerly? As has been wisely said by a well-known teacher and examiner:—

“The Science Primers which were published thirty years ago served an excellent purpose in their day. They aimed at representing in simple language, and in an elementary and introductory manner, the condition of our knowledge of the several sciences at that period. But science has advanced greatly since then; new facts have been discovered; older observations have been re-interpreted; new theories have been formulated, and old ones amended or discarded altogether. Moreover, research on the border lines between the various sciences has obliterated the hard and fast boundaries at one time supposed to exist, while the vast accessions to knowledge have necessitated extensive subdivision of many of the sciences.

“It would seem, therefore, that the time has come when a re-statement of the fundamental

theories of the several sciences should be undertaken—more especially in view of the great advances that have been made in recent years in scientific education, and of the spread of a desire for knowledge of scientific subjects among the general public. The very encouraging revival of popular interest in natural history which has led to and accompanied the development of Nature Study, both in schools and among the general public, emphasises this contention.

“It is impossible now to be a biologist without possessing some acquaintance with Physics and Chemistry; Biology itself includes both Botany and Zoology; Physiology deals with the vital phenomena which are common to both plants and animals, while Geology is based on Physics, Chemistry, and Astronomy. Biology, regarded from another point of view, leads directly on to Anthropology and Ethnology, and may be held to culminate in Sociology.”

It would be well for all those engaged or interested in Nature Study to follow out carefully this line of thought, and, starting with Astronomy, perhaps the widest and most wonderful subject of all, to pass to the book of the Rocks, *i.e.*, Geology, or the study of the Earth—to Physics and Chemistry, which deal with the forces at work upon the latter—to Biology, or the study of the living organisms it bears—and, finally, to

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Sociology, the science presenting to us the chief problems of the human race.

Of course, from these, other sub-sciences branch off, dealing with certain aspects or sections of the more general sciences in fuller detail, but a series of Primers, planned on the lines briefly enumerated above, should serve a useful mission, and prove especially invaluable to teachers of Nature Study and Higher Grade students.

Even now, we have not directly answered the vital question of what Nature Study, properly stated, really is. We speak glibly of it, but few, I am afraid, accurately realise its meaning. Surely it is not the mere plucking of a few flowers, and pulling them to pieces, counting the number of stamens and pistils, petals and sepals? Does Nature Study consist of the classification of various rocks, or of animals, or plants, or the imprisonment of an unfortunate Newt, the capture of a Butterfly, the robbing of a bird's nest, or the collection of isolated facts?

Does not real Nature Study rather consist of the close observation and application of "Nature's infinite variety" *in its proper setting and environment*? Should we not rather carefully consider how the Primrose fights for existence, how the great battle that is being continually waged in the world of plant-life is fought, how each becomes fertilised, and by whom; how, and where, and

when the birds sing, and mate, and nest, and feed, and fly; what they live upon; of the materials with which they construct their nests, and from where they obtain them; why they inhabit a certain environment; and examples might be multiplied almost indefinitely.

The Story of the Frog.—Let us, for a moment, consider a common animal such as the Frog. Bring a specimen into the home, or into the school, or class-room. Our curiosity is at once aroused, or, at least, should be. We are interested in the specimen of the amphibian before us, but how few can appreciate to the full its life and its surroundings. We know, for example, that it was once a tiny black speck in a mass of jelly-like substance, that it eventually developed into a sturdy little tadpole, and later into the perfect Frog. But, surely, we cannot realise what it truly is, unless we can picture its home near the sunlit pond, with the whisper of the breezes among the reeds, the crooning of a Moorhen, the scolding note of a Sedge Warbler, and the hum of the insects as they skim across the water. There, too, are the weeping Willow and the sturdier Alders, among whose branches the birds build their nests, and in whose welcome shade the Marsh Marigold raises its golden head. To those who know the Frog properly, he is one of many animals who go

to make up the living community of a distinct environment of the country-side. He, in his little way—insignificant, but nevertheless intensely interesting, even if ostracised from the picture, and considered on his own, as it were—helps to make one of many colours, which, when all are blended together, result in one living picture, but, if separated, each colour is nothing but a meaningless daub.

The Value of Studying Environment.—One may take a hedge, a pond, a wood, a meadow, a stream, a common, a country lane; an acre, a square yard, or even less, the result is, if studied aright, one living picture in each particular environment. Here is the Hedge I know. What is there, and why is it there? What does it convey to one, and how did it come there? Let us search out its inhabitants, its birds, and mammals, and insects, and flowers. All are there for a purpose; many, it is obvious, are absolutely dependent one upon the other. Looked at thus, and studied closely and intelligently, the hedge becomes a really wonderful place, and by concentrating attention in the manner indicated, a remarkable living picture is soon presented, which cannot fail to reveal a fund of wonder and delight, and will assuredly open the way to what may be justly regarded as real Nature Study.

II. THE CLOTHING OF ANIMALS

A few more comments as to Nature Study in the school and then we must pass on to consider some of the salient features of animal life. In our last article, emphasis was laid as to the importance and need of studying Nature's wonderful children in their own environment, but, alas, how often it is impossible for the scholars and teachers attending schools in our great cities to carry out this propaganda.

Pestalozzi's Message.—Do you not call to mind Pestalozzi's inspiring message? Listen. "Lead your child out into Nature; teach him on the hill top and in the valleys. There he will listen better, and the sense of freedom will give him more strength to overcome difficulties. But in these hours of freedom let him be taught by Nature rather than by you. Should a bird sing or an insect hum on a leaf, at once stop your talking: bird and insect are teaching him; you may be silent."

Many years have come and gone since Pestalozzi uttered these inspiring words, and yet they are as true and necessary now as ever they were. How few of us, however, have the coveted opportunity of following out these enticing suggestions, for

will-power alone cannot transport a class, however eager, into the open fields, neither can faith, though it equal that of a grain of mustard seed, bring the woods and hedges outside the school gates.

Many of our city schools have been dumped down into the heart of slumdom, where even the undaunted Sparrow finds existence a desperately hard fact. Here one might well exclaim, "What has Nature to do with a cheerless spot like this?"

But surely if the mountain refuses to come to Mahomet, the meeting can be arranged some other way! Is it not possible to bring something of the open air and country life into the school itself? The task may be laborious, but the harvest is rich. Specimens are not always available, and facts are sometimes lacking; but then comes along the ubiquitous book, and although it must be confessed that the latter is often but a poor substitute for the living article, yet a crumb is better than no bread and books have been known to inspire. Moreover, it serves its purpose well if care has been taken to reproduce actual scenes from the country, such as cannot fail to convey an accurate idea of some of Nature's wonders.

We may now consider the clothing of animals, and endeavour to realise of what importance the same is to them, both as regards the warmth and covering afforded their bodies, and the colour-



Frog Spawn.



Adder.

Young Frogs.



Newts.

protection that is so very remarkable in several instances that will shortly be detailed.

If we run briefly through some of the more important groups of animals we find, starting with the highest of all—the Mammals, which includes man himself—that the body covering consists of hair, fur, spines, and other outer clothing. In this connection may be mentioned the hair of man himself, as well as Deer, Cattle, etc., the fur upon the Fox and the Rabbit, the spines upon the Hedgehog.

We then come to one of the great trees of animal life—our bird friends. These, as we all know, are clothed in feathers, and these again are of various kinds and colours. For example, the Kingfisher is our most beautiful British bird, and contrary to most birds, both sexes are equally gorgeous.

The well-known Warbler family, which includes such renowned songsters as the Nightingale, Black-cap, Garden Warbler, and others, are very plainly clad. Their sombre dress often surprises the layman, who expects to see a bird which is capable of pouring out such delightful minstrelsy, such an outburst of passionate and soul-inspiring music, clothed in all the colours of the rainbow! It is the rule, rather than the exception, that birds of sombre colouring are to be numbered among the finest song birds, whilst birds of brilliant plumage, such as the Kingfisher, the Bird of Paradise, the

Pheasant, the Lyre Bird, the Humming Birds, and others, do not utter any music worth calling such, indeed, in many instances they possess ear-splitting and discordant notes the reverse of pleasant.

Next to our feathered population, in the classification of animal life, we come to the Reptiles, which of course include the Snakes and the Lizards. The body covering of these too often despised creatures is composed of scales and plates, whilst the Amphibians—to which belong the Frog, Toad, and Newt—have naked skins, which are, nevertheless, well calculated to cover and protect the skeleton and internal organs.

The Fishes, as every one knows, have scales, but much divergence is seen in these, for, if we take the common River Eel, or the mud-loving Tench, we find exceedingly small scales upon the body, whilst in the Roach, the Rudd, the Dace, the Chub, and others, the large scales are a characteristic feature.

Leaving the fish we reach the members of the Crustacea, namely, the Lobsters, Crabs, Shrimps, and other similar creatures. These we find have a horny skeleton, known to almost every one, and some of the animals claiming kinship with the Crustacea, such as the Crab, have the power of growing another limb if they happen to lose one of their appendages.

The members of the great group of animals which we call *Insecta*, or *Insects*, do not have a backbone, and are of course numbered, like the *Crustacea*, among the *Invertebrates*, or animals that do not possess a vertebra.

Insects then are clothed in a horny skin, and whereas some have hard coats of mail (such as the *Beetles*), some have soft clothing which still appears well calculated to serve them sufficiently, whilst the handsome *Stag Beetle*, for example—beloved by boys whose curiosity is aroused by the handsome appearance of the male—is clothed in a horny garb, and is a really wonderful member of the *Coleoptera*. The *Glow Worm*—which is also a *Beetle* and not a *Worm*—is soft-bodied, and instances might be multiplied.

The *Mollusca*, or *Shellfish*, possess hard calcareous shells in which to hide their soft bodies, and the *Oyster*, the *Mussel*, the *Whelk*, and the *Limpet* need only be mentioned in passing. The *Sea Urchin* is a marine representative of the terrestrial *Hedgehog*, but the *Urchin* is a more complex and marvellous creature than his cousin upon land, and every tiny portion of the “test” or shell is worthy of examination through a good microscope. We have thus briefly run through the clothing of the chief groups of animals, omitting many of the lower forms of animal life, which it is not necessary to detail, and must now pass on to

consider how some of them are served by means of what is known as protective-colouration and form.

III. PROTECTIVE-COLOURATION AND FORM OF ANIMALS

When we come to consider how some kinds of animals are clothed we may see, in several instances, how admirably adapted they are for the environment they frequent and the life they lead. We are more concerned in this particular essay with the remarkable phenomena of protective-colouration and form rather than of habits.

Recent observations by competent recorders—especially naturalists and explorers who have watched the Tiger in the jungle, the Zebra and the Giraffe upon the plains and deserts, and other animals inhabiting foreign climes—go to prove that a good deal of nonsense has, however, been written as to the protective form and colouration of some well-known denizens of far-off lands, but there are a great many examples forthcoming of fully authenticated cases *close at home* to which we may be permitted to direct attention. We will consider a few of the more typical ones in scientific order. This brings us to the Mammals. Among British species few, it may be, deserve special mention, yet I have noticed many times during my pilgrimages in the country instances which vividly

occur to me as I write of animals which appear to me to be well protected, either by reason of their form or colouring, or by the nature of the habitat in which they are found.

The Squirrel is an active, elegant, and amusing creature as it scampers round the bole of a tree, playing hide and seek with the observer, and it may be that his great agility results in his movements being difficult to follow, yet when we see this pretty woodland animal darting among the new-foliaged tree-tops in the Springtime, his rich reddish-brown coat seems well calculated to harmonise with the surroundings he so charmingly ornaments.

I was watching a Brown Rat recently engaged feeding as he sat upon a bank of brown earth, and without the aid of field-glasses it was difficult—even at comparatively close quarters—to make out any definite form of even such a common and distasteful pest.

Various kinds of Field Mice which frequent hedgerow bottoms, slipping about with lightning rapidity, are well protected among the fallen leaves of a past Summer.

I have located with some difficulty Rabbits upon a Common, as well as Hares in an open field, whilst the Blue or Mountain Hare changes his fulvous-grey coat of Summer for a white garb in Winter. It will at once be seen that this white

colouration well protects this animal in the colder regions it frequents, when the surroundings are covered with a mantle of snow.

Some of the little Shrews, as they skip merrily through the grass fields, are often very difficult to find, and still more difficult to follow in their movements. Their activity, it is true, greatly aids them, but their colouration also plays an important part in their protection and preservation.

When we come to our feathered population, a larger number of instances may be cited. A female Pheasant, a Snipe, or a Woodcock, sitting placidly upon her nest, is often very difficult to locate. It needs a trained and practised eye to find her, and I have frequently had a sitting bird pointed out to me by the keen-eyed gamekeeper, which required all my ingenuity to discern.

The Tree Creeper and the Wryneck match in a wonderful way the tree-trunks and branches which they so delight to frequent. The first-named, especially, is splendidly protected in his sombre brown dress, and if the little arboreal bird did not make a sort of scampering noise as he mounted upwards, he would very often remain unseen altogether.

Disturb a Woodpecker in an open glade in the wood. He at once flies to the bole of a tree, and it requires careful watching to follow and locate the gay bird-sprite, so well does the green and

grey-lichened oak-bark match his green and yellow plumage.

Several kinds of birds which tenant the seashore are very difficult to observe, and in this respect may be mentioned the Ringed Plover and some of the smaller Waders. When we come to young birds—and more particularly those born on the open ground—it is quite remarkable to notice their protective resemblance to the surroundings. Thus, on a barren, stony tract of country, where the land is poor and untilled, the young Stone Curlews are with difficulty located, and this is enhanced by the youngster's habit of crouching low, like the parents, and remaining motionless. Young Ringed Plovers upon the shingle are equally difficult to discern, and I have often trodden, almost, upon baby Partridges and Pheasants when they have been crouching among grass and other herbage.

The Spotted Flycatcher—an inconspicuous brown bird, which is little known, and often mistaken by those unacquainted with birds for the Sparrow—matches in a remarkable way the trunk of a tree, when his nest is hidden away behind a piece of loose bark, and I remember, on one occasion, seeing a bird of this species fly on to a Silver Birch-tree, which required very careful watching through a pair of good glasses before he could be seen.

The nests and eggs of our bird friends are in many cases also well protected, and one may mention the home of the Brown Wren among dead leaves or bracken, the green cradle-home of the Golden-Crested Wren among the pliant branches of a Fir-tree, and the beautiful nest of the Chaffinch, deftly woven against the bole of a tree.

The Partridge contrives to cover her eggs over with leaves before commencing to sit, and thus her eggs often escape detection, and the Little Grebe frequently resorts to a similar proceeding. The eggs of some kinds of birds which place their treasures upon the pebbly beach, and the Lapwing upon the ploughed field, are very difficult to detect, whilst some of the smaller birds who nest upon the ground, such as the Chiff Chaff and Willow Wren, Skylark and Tree Pipit, Grasshopper Warbler and Wood Wren, hide their homesteads in such a way that much patience is required before they can be detected.

Among the Reptiles, Lizards and Snakes match their surroundings in a truly remarkable manner, and are so quick and active that to follow them is often a sheer impossibility. I have seen the Common Lizard sitting contentedly basking in the sun quite close to me, but it was more by chance than wisdom that I discovered it.

Frogs and Toads are frequently seen to be pro-

PLATE XIII.



Nest and Eggs of Mistle Thrush.



Sea Horse.



Common Lizard.

tectively coloured in some habitats, and some kinds of Fresh-water fish are followed with extreme difficulty when in their natural element.

In the great world of Insect Life, perhaps, more than any other examples of protective form and colouration are forthcoming. The eggs, the larvæ, the pupæ, and the imagines, or perfect insects, of many species, are protected by form and colour in a most remarkable way.

The larvæ match their food-plants very wonderfully, and many kinds may almost be under one's nose, as it were, and yet escape detection.

The pupæ are hidden away more—some above and others under ground—but even those that are well exposed are mostly only seen by the practised observer. Indeed, it is worth noticing how very few pupæ the average wanderer along the countryside locates.

The perfect insects often harmonise with their surroundings, and the under surface of the wings is so suffused that when a bright-coloured Butterfly closes its wings, the sudden transformation is, in many instances, quite bewildering. We might go lower down the scale of animal life and mention a number of other animals—especially those which tenant the sea and seashore—which are well provided for in the matter of protective form and colouration, but sufficient has already been written to justify the allotment of this, our present con-

tribution, to the section set out at the heading of this chapter.

IV. ANIMAL LOCOMOTION

It will be apparent to those who have followed these essays thus far that it is my purpose to concentrate chief attention upon those kinds of animals that inhabit our own country, but it is important to emphasise this point for fear the matter is overlooked. It would be a comparatively easy task to almost indefinitely enlarge the various sections if we were to include the forms of animal life *found outside our own country*, and as we have many interesting examples close at home, that, at any rate, is not our intention.

We may well devote this portion of our journey to the important subject of animal locomotion, or the moving powers of animals, and it is only as a result of carefully sitting down and considering these in some detail that any accurate conception can be gained concerning their great variation.

Let us briefly run through the chief groups of animals in somewhat like scientific sequence. The Bats, as we have already learned, occupy pride of place among British animals, and of their locomotive powers little need be said. Their remarkable powers of endurance and speed upon the wing are well known, as also their keen sense

of touch. When upon the ground Bats are most ungainly, shuffling along in a cumbrous fashion painful to witness. The membranous wing of this wonderful Mammal is worthy of close examination, a remark which applies equally well to the general structure.

The Squirrel, as we saw in the last essay, scampers, climbs, and springs through the tree tops in a most ingenious manner; the Deer are fleet of foot, and, at the same time, good swimmers (a fact not so generally known); the Rats and Mice are very quick and active, as those who have tried to catch them can testify; and a similar remark might be made with regard to the Rabbit and the Hare.

Whilst the Rabbit can get over the ground with celerity when occasion demands it, and it can skip, jump, twist, and frolic in a most delightful way, the Hare, for speed and staying powers, is easily its successful rival. The Hare is a fine runner almost anywhere; either over hill and dale, or over flat country, it is equally successful. The manner in which this interesting Mammal covers the ground is nothing short of remarkable to notice, and when he once gets going, it is a fine sight to watch the creature, as he contrives to increase the distance between you and him as much as possible. You may sometimes almost tread upon the Hare before he will move, but, give him a yard or two's

start, and man is no match for this swift-footed rodent, and it requires a very quick greyhound to prove the winner. This animal is also a first-class swimmer, and I have known it take to the water to escape its pursuers on more than one occasion, much to the latter's astonishment, as might well be imagined.

Whilst our four-footed beasts walk, run, jump, and so on, when we come to our bird friends, we find, of course, that their chief means of locomotion are provided by their wings, which enable them to take either short or protracted journeys in the air. It is remarkable to observe that the Common Whitethroat, which just flits about the hedgerow, or among the bushes in the garden, taking short flights of a few feet only, should be capable also of a long migration journey over many a far-off land and sea.

The same remark applies with still more force to some of our small Summer Migrants, such as the Chiff Chaff and the Willow Warbler, whilst, when we come to the smallest bird in Europe, the Golden-Crested Wren, is it not a mystery how such a minute feathered creature should be able to battle against the roughest storms, and travel both over land and sea successfully?

Birds of prey, such as Kestrels, Sparrow Hawks, Eagles, Falcons, and others, have wonderful locomotive powers. They soar, hover, sweep, rush,

dash along, and carry out many other manœuvres of an interesting nature.

Some birds walk (the Wagtail, the Starling, the Rook, and the Crow); many hop; some waddle (especially Ducks and Waders); some run (the Wagtail does so beautifully when a specially fine insect wants catching quickly), and the locomotive powers of birds generally, *when upon the ground*, are worth making a special study of.

Geese, Swans, and other birds which visit us during the Winter from the far North fly high; they mostly travel about in companies and possess great stamina. What we may call ground birds, such as Partridges, Pheasants, Landrails, and others, do not, unless occasion demands it, often take to flight.

Woodcock and Snipe have a curious zig-zag flight, and are beloved by sportsmen who are fortunate enough to bag them, whilst in the nesting season many kinds of birds go through remarkable evolutions in the air for the purpose of wooing and winning a female partner.

Woodpeckers, Tree Creepers, Wrynecks, Tits, Nuthatches, and other birds climb trees with wonderful cleverness, and the Titmice, especially, may well be designated feathered acrobats.

Leaving the birds, we find that Snakes glide through the undergrowth with great rapidity, and the Adder resorts to a sort of springing, which

has, however, been a good deal exaggerated. Lizards run along very quickly, and are to be numbered among the most rapid moving animals on the British list, whilst Frogs and Toads swim splendidly when in the tadpole state, but mostly resort to hopping and shuffling when they become older and wiser.

Fish swim elegantly, and their spindle-shaped bodies are well calculated to permit them to skim through the water with ease and grace; insects creep, crawl, hop, jump, and fly, and even if one sets himself out to consider the powers of locomotion possessed by British insects alone, he would find his time well occupied.

Spiders are expert tight-rope walkers and balloonists, as those who have watched these intelligent creatures must recognise; Crabs, Lobsters, Crayfish, and similar animals creep and scuttle along, and although ungainly out of their natural element, are fairly active when within it.

Many kinds of Shellfish possess very few locomotive powers, just fixing themselves in a certain chosen spot for life, but when we come lower down in the scale we meet with a whole host of wonderful forms of animal life whose every movement is attended with a fund of interest and wonder, and whose remarkable life-history a high-power microscope can alone reveal.

Space does not permit of an extension of this

phase of our subject, and it must be left to the reader to extend and amplify our suggestions, which do not pretend to be more than a brief outline of a few salient features concerning the study of animal life.

V. CAPACITY FOR FALLING

There is another branch of animal locomotion that is worth some amount of consideration, and, for want of a better title, we may call it the capacity for falling. For much of the information in this and the succeeding section I am greatly indebted to my old friend Mr. James Aird of Girvan.

It is very interesting to observe and examine the many ways and means Nature has provided for Mammals, Birds, and Insects by which to protect themselves from injury when falling. Many living things spend the short period of their existence in a number of falls and tumbles. It is said of walking that it is a series of escapes from falling. The most common means provided is by the falling body compacting and curving itself in a part of, or a whole circle, thus avoiding falling plump upon the centre of gravity. There is another means provided, when the fall is upon the centre of gravity, by an arrangement of muscular springs, whereby the shock, if not altogether prevented, is

greatly minimised. Then we find other living things are provided with a combination of springs and curves. We find this, for example, in some kinds of caterpillars.

There is also another provision made whereby some kinds of caterpillars can, by means of glutinous threads, drop from twig to twig when in search of their food; and if by misadventure they are thrown or fall to the earth, they in their fall assume a curved shape, and having hairs or bristles all over their bodies supplied with a beautiful arrangement of sensitive nerves, and which enables them to instantly curve the points of the bristles, this gives them a protection from injury when falling to the ground. The Hedgehog is an example in a way, but not a good example, as its spines are only a partial preventative from injury when falling, being for its size one of the heaviest of animals. It is more suited for short falls or rolling down inclines. The Hedgehog, if dropped from any considerable height, would fare badly, I am afraid.

Some kinds of Spiders have a way of folding their legs around their bodies, and presenting a number of joints, which gives them immunity from injury when falling. Some insects have scales and plates on their bodies. In the one case the hard rounded plates are their protection; in the other their having the power of erecting and



Larva of Indian Stick Insect.



Common Cockroach.



Larva of British Stick Insect.

stiffening the scales when falling. There are also insects which, from their specific gravity and by contortion of their limbs, become parachutes, and by catching upon the air they either fall in a series of spiral turns like descending a spiral staircase, or, by slowly oscillating from side to side, as one has seen when in childhood we threw a broken bit of white delf into the old-fashioned wells and watched its swing-swinging from side to side, down, down, getting fainter, and fainter, finally disappearing.

The well-known fact of the nine-lived Cat when thrown from a considerable height alighting without sustaining serious injury is an example of the protection afforded by means of the curve and spring. In the case of the Cat falling, the curve becomes intensified into a deep loop. We all know how this animal can draw up its body in the middle in a way no other animal can do. When the Cat finds itself in mid-air this high-arch propensity is brought into full play, and when it reaches the ground it has an immense stock of what may be termed anti-shock to draw upon.

Then we have various kinds of jumpers. Of course the termination of a jump or leap is a fall. We have the leap of the Horse protected in his fall by the great number of beautifully arranged springs in the foot and leg. Even when the Horse falls sideways he is well protected by the natural pads on shoulder and hip.

Among insects there is one considered to be the most wonderful jumper, and, on that account, I presume, we may say it must be the most wonderful faller, and that without injury, and more's the pity! Among jumpers, too, we have the Frog, which can do the falling to perfection, and it is done in such a great way. I have by gentle persuasion got the Frog to give a private exhibition of his jumping and falling powers. The Frog is quite a master in the art of falling. I have tested him on suitable ground, a nice turfy platform to spring from and a nice soft springy bottom to fall upon, a good depth down; how fearlessly the animal launches outwards and downwards. It is so amusing to watch the landing below; it is not all graceful, but it seems very satisfactory to the Frog, just as if he had done one of the few big things he was sent into the world to perform. When it alights, it at once gathers its scattered legs together, draws up its head, and gives a big wink with both eyes. The Frog is undoubtedly very finely adapted for falling without injury.

In exhibitions of pole-vaulting, there is skill and practice in falling. Some are seen to drop on the toes, and immediately roll over, just seeking after the circular motion. It is quite common to see actors, when in a play, fall, and, when done properly, they take no harm. When one speaks

of falling, it is generally understood to mean a fall downwards. But there is a curious instance of the expression being inverted; it is in the case of a fish which lives at a great depth in the sea, and cannot live near the surface. At times, in its eager pursuit of small fishes which it preys upon, it rushes beyond the boundary-line of its watery domain, and, owing to the construction of its air-bladder, it actually falls upwards and perishes, because it has no provision made to protect it from falling the wrong way—upwards.

What flight is to many active creatures, falling is to others—the means of preventing injury and, in many cases, saving their lives. Nature is ever careful and solicitous for the well-being of living things; she even has latent powers of developing ways and means of preserving her creatures from new dangers when they arise; not that she anticipates—she must be touched and appealed to, and then she is sure to respond. We see how children in their play can fall, tumble, and roll about without injury, indeed some of their happiest hours are spent in such frolics; also, the young of certain animals, when romping and having fun, will fall and tumble about sometimes in a reckless and rough way without injury. A wonderful thing appears here, for this manner of frolicking is observable among carnivorous but not among herbivorous animals, such as the foal,

calf, and lamb; they gallop, jump, and skip; a wonderful example of evolution, Nature dictating the best methods to gain the desired end.

VI. THE FLIGHT OF INSECTS, MAMMALS, AND FLYING FISH

We have already considered briefly the subject of animal locomotion, and it will be remembered that but scanty reference was made to the world of insect life. We may, therefore, proceed to consider a few points in connection with the flight of insects, and give pride of place to the Dragon Fly.

Some kinds of these most interesting insects can, without reverting to turning, fly backwards or forwards, or to right or left, equally well and adroitly. The Dragon Fly is the largest four-winged British insect; its local name in some districts of Scotland is Bill Adder, and is by some supposed to have a venomous sting in its tail, but this is not the case. This insect, both in the larval and winged state, is the scourge of smaller insects. It is the dandy of the insect world, turns out in full parade in hot sunshine, but is seldom seen in bad weather. How it skims and flashes along, coursing up and down like the Swallow, and in the same line of business—swallowing flies. It has a most insatiable appetite, and seems void of any feeling of pain. The proof is, one may sever

its body immediately behind the shoulders, when its head will take flies and endeavour to swallow them, even although it has no stomach to put them in!

It is a strong, swift, beautiful flier, and is very attractive as it flashes to and fro in the sunlight, its wings flashing and glowing with bronze iridescent colours; their bodies vary in colour, in some black prevails, in others green, blue, and red. Sometimes when in full flight it will suddenly check itself, pulling up with a crackling shudder, producing a sound like pieces of stiff silk rubbed smartly together.

Butterflies when flying have a floundering, and, one might say, apparently meaningless flight, as if unable to regulate and control their movements. This singular mode of flight is caused by a series of zig-zags, having an intermittent longer one like a flutter, but the Butterfly has its flight well under control, and one may see it now and again alighting on coloured objects or flowers, a stone, a thistle bloom, or a horse-knot; but to see a Butterfly in an active state it is a good plan to put down some bruised, half-fermented plums. This fruit has a great attraction for Fritillaries, Red Admirals, and others of the Butterfly family.

While writing of the delicate and simple Butterfly, there are certain actions about it which are peculiar—such as instinct *versus* reason. Suppose

one sees a Butterfly alight, and wishes to capture it. At the first attempt it will probably permit one to throw a hat over it, but suppose (as often happens) it eludes the grasp of the hand, rises in the air, but at a short distance it again alights. In one's second attempt to capture it, it will not permit such an easy approach, and most likely takes flight before its pursuer is near enough to use the hat. If watched it may be seen to again alight, when a third attempt is made to reach it, but this time when at a considerable distance it may be seen rising high in the air and quitting the neighbourhood altogether. Is this instinct or reason? Man is ever jealous of the faculty of reasoning, and invariably attributes any and every action of the inferior world to instinct.

The well-known family of Bees comprises—the Hive Bee, Humble Bee, Clothier Bee, Carpenter Bee, Mason Bee, Upholsterer Bee, and many others. They have four wings, the upper larger than the under. The most powerful fliers of this family are the Bumble, or Humble, Bees. The rapidity of their flight is so great that, could it be calculated, it would be found, if the size of the creature be considered, to far exceed that of any bird, as has been proved by the observations of a traveller in a railway carriage, proceeding at a rate of at least twenty miles an hour, which was accompanied, though the wind was against it,

for a considerable distance by a Bumble Bee, not merely with the same rapidity, but even greater, as it not unfrequently flew to and fro about the carriage.

The aerial movements of the Hive Bee are more direct and leisurely, and in their search for honey they fly long distances. A bee-keeper in England made arrangements with the members of an Apiary Society that on a certain day he would dust a little flour over each Bee which emerged from one of his hives, and any of the Society's members observing such Bees were to report. Many sent the results of their observations, and one member stated he had seen several of the miller's flour-coated Bees in his garden, a distance of eight or nine miles from their hive.

Moths differ in their flight from Butterflies; they fly straighter and steadier, their bodies being generally bulkier and heavier. Some have opaque wings; others transparent wings. They are more vigorous in the use of their wings than Butterflies. The Humming Bird and Sphinx Moths dart with great rapidity from flower to flower, hover for a short space, thrust their tubular probosces into the flower, extract the nectar, then off to another flower, keeping on the wing during this process.

The Beetle family are in some cases provided with wings. The Cockchafer, which is one of our

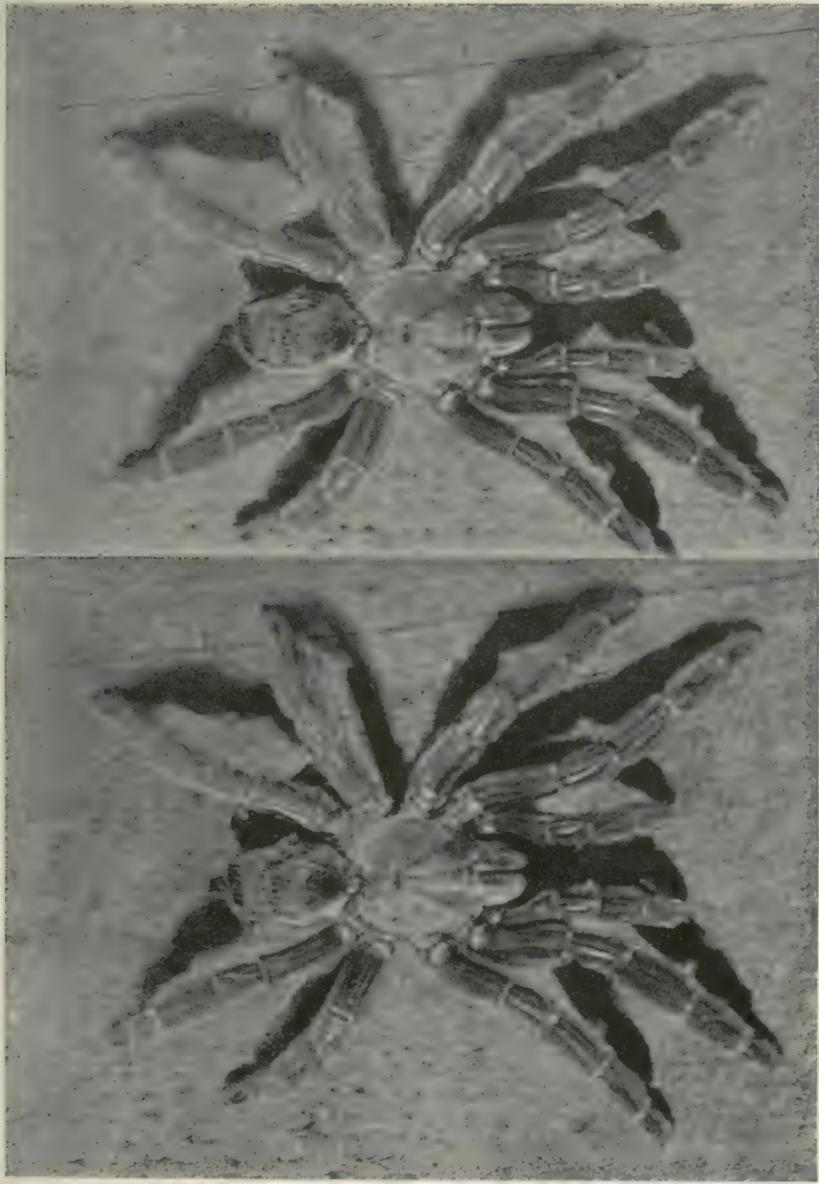
largest Beetles, may be seen on Summer evenings whirring along in a straight line, unable at times to steer clear of objects in its line of flight, sometimes bumping against one's face.

Among Beetles we also have the pretty little Ladybird with its scarlet, black-spotted wing-cases. They are deadly enemies of the Aphis or Green Fly, and the scarcity of the one may in a great measure account for the plentifulness of the other.

As the Beetle family spend most of their time grovelling in or on the earth, the wings are very carefully kept in their wing-case wardrobe and only brought out on special occasions, and immediately on the insect alighting, the first act is a careful folding up and packing away of its wings.

A few of the best known insects have now been selected, and brief reference made to their mode of flight. There are, of course, many thousands of different insects all very wonderful and interesting, not only in their modes of getting through their short periods of existence, but in the examination of the beautiful colours, the complex muscular and nervous system, and in many other ways. The complicated arrangements in the insect world are as wonderful as in some of our higher organisms.

Poets and writers of prose often refer to the



Tarantula Spider.

beautiful birds and flowers, and rightly so, but seldom is the insect world referred to. But if the insects were, as a rule, large enough for the human eye (unaided by the microscope) to distinctly see their gorgeous colourings, their wonderful motions, and general magnificent appearances, they would, in many cases, outrival our most gorgeously arrayed birds and flowers. Solomon knew a little about Natural History and the wonders of creation, but not until man discovered and applied the microscope were these most delicate and exquisite creations revealed; to know that an atom of life smaller than the point of the finest needle (a giant among the finer organisms of life) contains head, body, and many internal organs, muscles, blood vessels, stomach, and nerves, is truly beyond our comprehension.

Before finally concluding our notes upon the flight of insects, it will be interesting, perhaps, to follow the subject a little further.

Some insects rise to a great height in the air, and at times we see the Swift and Swallow (two of our most useful birds) following them up and feeding upon them.

Locusts in flight cause great alarm among the people in the countries they visit. Happily, we in Britain never hear the sound of their wings; but the reader who wishes to obtain some idea of their wonderful migrations would do well to read

a fully-authenticated account, given in *The Story of Insect Life* (Culley).

Among the many insects I have watched in their flight, none puzzle me so much as what I will call vertical and horizontal flying Gnats. Just watch the common rough Gnat when a number of them are dancing up and down, say about a foot in depth. They return from top to bottom, and from bottom to top, as if they were rebounding top and bottom. How is this done?

Still more wonderful is the flight of a smaller Gnat, about a quarter of an inch in length. This insect shakes in flight from side to side, something like when one has seen a child putting a piece of stick into the fire, and when the point becomes red-hot, pulling it out, and quickly moving from side to side. How can this small creature execute this rapid and peculiar movement?

One sometimes wonders how Butterflies, and many other insects which have four wings, can use them so rapidly and freely without damaging the plumage. In this part of flight there is a beautiful arrangement of hooks, pads, and stiff scales, which prevent the abrasion of the wings.

During daylight, and especially during sunshine, we see before us a great part of the insect world, but only a part, as there is a numerous host which shun the glare of day. Like the votaries of fashion, they rise not from their couch until their

more vulgar brethren have retired to rest, while the Painted Butterfly, the "fervent Bees," and the quivering nations of Flies which sport—

Thick in yon stream of light, a thousand ways,
Upward and downward, thwarting and convolved,

love to bask in the sun's brightest rays, and search for their food amidst its noontide fervour.

Flight of Mammals.—We have already mentioned in passing the flight of our only British Mammal which can fly, *i.e.*, the Bat, but a few further notes upon the flight of Mammals, and also respecting Flying-fish, may be given. Such notes must necessarily be brief, or our intended survey will be far from complete when we reach our allotted destination, and we therefore proceed.

The Bats, of which there are many kinds, are best known among Mammal fliers; the flight of our Common Bat may perhaps be compared to a combination between that of the Swallow and Butterfly. During our twilight walks, when there is a hush among our feathered friends, and the curtain of night is being drawn around the hills and woods, then the Bat is seen flashing and flickering along, mostly at a height of twelve or fourteen feet. It is perfectly noiseless, except on dark nights, when it has a habit of accompanying any one walking, and may be heard at intervals

uttering a squeak, or rather a sound between a squeak and a whistle, appearing as it does at a time when other creatures are hidden.

We welcome its presence because it throws a ray of light into what would otherwise be grey and sombre. Although becoming torpid during the Winter months, when in full life and activity it is one of the most sensitive creatures. We are told that a Bat deprived of its eyesight, and let loose in an apartment where many cords intersect the space, will fly about and thread its way out and in without touching them. We know, too, that many blind men develop a sense of feeling which warns them when approaching any obstruction in their path.

Bats are real fliers, but there are connecting links between flying and leaping in foreign climes. There is the Flying Fox and the Flying Squirrel, animals that are supplied with a membrane stretching from their fore feet and legs to their hind feet and legs. When moving from branch to branch, or tree to tree, they make a leap, and spreading out their four legs they stretch this membrane, and swim or float from one place to another. They at the same time give a quivering undulation of the membrane.

Flying Fish.—As there are birds which fly under water, so also there are fish which fly when out

of the water. They are sometimes called "Sea Swallows" because of their resemblance to Swallows in their flight. Some of these fish have four wings, others only two. The fish clears the water by the aid of its tail, keeping its wings close till free of the brine; it then flies with a rapid motion until the wings become dry, which generally happens in the course of sixty yards. A touch of the water enables it to fly on about twenty yards further, and then the fish returns to the sea exhausted. It does not rise more than six feet from the surface, and seldom flies for more than one hundred yards.

As regards the line of flight, some people profess to say that the fish fly against the wind. This may be so, sometimes, but it is accidental. The fish fly just where they imagine they may get out of the way of various denizens of the vasty deep, which pursue and seek to devour them. Hence their frantic efforts to escape.

VII. ANIMAL HOMESTEADS

The variety in the construction, and the environment in which some are placed, of the homes of even our British species of animals, are two interesting features worthy of notice. Whilst some kinds of animals do not make the slightest attempt to build a homestead of any description, either for

nesting or breeding purposes, or for resting, hiding, or sleeping in, there are others that resort to a particular haunt, which serves the purpose of a sort of home, others, again, that make some pretence of constructing a family nursery or homestead, and still others, such as our bird friends, which build, as is so well known, beautiful cradles in which their young may be nurtured and reared.

The weird Bats, for example, make no effort at building a homestead of any kind. An old loft, a barn, an old house, holes in trees, caves, quarries, and other similar habitats, serve this flying Mammal equally well.

There are many kinds of Mammals, however, which do evince considerable ingenuity in building a homestead, more especially, we should say, for the purpose of rearing the young. The Rabbit, for instance, makes quite a cosy nest underground, consisting, as it does, of dead grasses, feathers, flick from its own body, and other soft materials. Here the blind and helpless young find a snug retreat, until old enough to fend for themselves, and many a hapless young Rabbit falls a prey, when in the nest, to some marauding Stoat, or Fox.

The Hare, unlike its near relative, the Rabbit, does not build a nest at all, and where its "form" does serve as a homestead, it is found above, and not below ground. Consequently, we find that

young Hares, not being sheltered and thus protected in a hidden nest underground, are born with their eyes wide open, and are soon able to run about and obtain their own living. It will at once be seen that, being born in an open and so-called "nest" above ground, numerous enemies beset them, so it comes about, as in the case of so many ground-nesting animals, that the young of the Hare are well developed at birth, and are soon able to look after and defend themselves.

Three other animals that resort to a fortress below the soil are the Mole, the Fox, and the Badger, whilst a good few build their homestead, or make some place such as a tree-stump or hedge-row-bottom their habitation very little above ground, if at all.

Whilst the velvety-clad Mole can, by means of its clean flesh-like feet, burrow under the ground with amazing dexterity and swiftness, and builds a nest which is not perhaps of such a remarkable description as some pictorial representations in books lead one to believe; whilst the tough old Badger—our only British example of the extinct Bear—is most industrious in constructing an "earth," the Fox never excavates a homestead on its own account. In almost every phase of its home life, excepting in the procuring of food, at which it is an adept, the Fox appears to be an indolent sort of animal, and the dog Fox will

never on any account rear the cubs if misfortune overtakes the vixen, and Mrs. Reynard is left to bring up the progeny unaided!

This sagacious rascal, rather than make a home of its own, takes possession of the burrow of a Rabbit, and will even condescend to enlarge it so as to safely harbour its own body, its consort, and young, or it will share the same earth as the Badger without, curious to relate, the slightest umbrage on the part of the latter! On visiting an earth tenanted by a Badger and a Fox it is easy to discern which is the best housekeeper, for, whereas that portion inhabited by the Badger is a model homestead, clean, trim, and neat, that part occupied by the Fox is untidy; it is littered with uneaten food, and is a somewhat disgusting abode both by sight and smell!

Animals such as the Deer do not, of course, require a homestead, for, soon after the fawn is born it is able to skip about and even swim across a wide river.

The various species of Mice and Voles construct interesting homesteads, and I have seen nests of the common House Mouse that would do infinite credit to many kinds of birds.

Then there is the globular ball of dry grass deftly suspended in a bush by the extremely pretty and Squirrel-like Dormouse, and the nest of the Harvest Mouse cleverly hung among the

growing corn. The Squirrel, of course, is arboreal in its habits, and in a tall spruce Fir tree constructs its large "drey."

The Stoat often takes advantage of a hole at the base of a tree, and not only rears its young there, but makes it a storehouse or larder, where it can stow away Pheasants' and Partridges' eggs to its heart's content, and in a most ingenious manner.

The homesteads of our feathered population had best be treated of in a special section, their number being so many, and their variety so diverse. This being so, we may pass on to Reptiles and Amphibians, which do not make a homestead at all, depositing their eggs (the Grass Snake) in manure-heaps and elsewhere, producing their young alive (Common Viviparous Lizard and Adder), or laying their spawn (Frogs, Toads, and Newts) in ponds, ditches, etc.

Then we come to the Fresh-water Fishes, and here again little need be said, for, in the majority of cases, no homestead, or nest, or habitation of any pretence whatever is constructed, the female depositing her ova among gravel, weeds, etc., and taking no further heed of same.

But stay, we must not omit to mention our industrious little fish the Stickleback, Three-spined, Ten-spined, and otherwise, for he, gay little fellow that he is in his red, soldier-like uniform and brilliant eyes, builds quite a model homestead.

Watch the male Stickleback on some fine sunlit day, as he swims round his little nest warding off males and other unwelcome visitors. There, on sentinel guard, he will be found during the Spring in some river or stream, and whilst he will by various devices entice a female of his own species to enter the guarded portals for the purpose of depositing some eggs in the homestead, no other creature is permitted to enter, and the jealous little male, glowing with iridescent colours and eyes flashing like green diamonds, makes no secret of his haughty nature in driving away intruders which approach within sight of the homestead.

VIII. BIRDS' NESTS

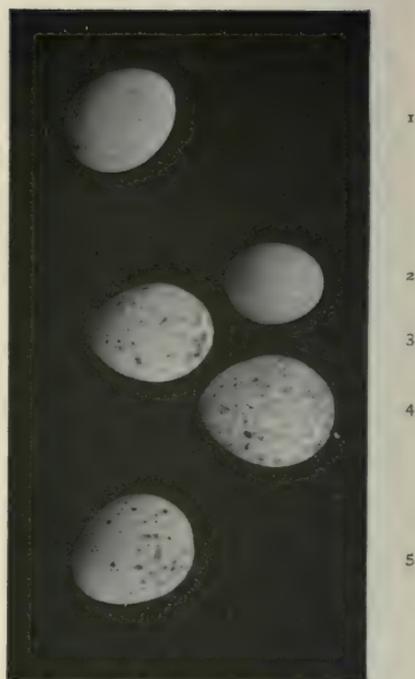
In our last essay we took a hurried glance at various kinds of animal homesteads, but excluded our feathered population, promising to treat of them in a special section.

Birds' nests and their nesting habits are very diverse, even if we only stay to consider the species that are found around us. There are one hundred and eighty to two hundred species in all, but several of them resemble one another in the manufacture of a home, and some, unfortunately, are rare and need not detain us.

Whilst some—and more especially those which nest upon the ground, or lay their eggs in holes,



1. Red-backed Shrike.
2. Blackcap.
3. Reed Bunting.



1. Long-tailed Tit. 2. Goldcrest.
3. Tree Creeper. 4. Wood Wren.
5. Chiff-Chaff



Nest and Eggs of Wild Duck.



Nest and Eggs of Snipe

crevices, etc.—make very little pretence at building a homestead, there are others which are not content with a few sticks, straws, and other materials, and which, by dint of great perseverance, construct remarkable nests, beautiful to behold.

The Lapwing, that typical bird of the meadow, whose weird cry and engaging habits cannot fail to arrest attention; the Ringed Plover; the Nightjar; the Stone Curlew or Norfolk Plover; and several other kinds of feathered fowl, which lay their eggs upon the bare ground, the pebbly beach, or the sandy shore, practically make no nest at all. A mere furrow or depression in the meadow is sufficient for the Lapwing; among the round pebbles on the beach suits the Ringed Plover admirably; the useful Nightjar places her two marbled eggs on the bare ground near woodland, perhaps under the cover of bracken or among bleached stones; the Stone Curlew follows a similar course to the last-named, but resorts to desolate waste lands; Woodpeckers, Wrynecks, and Nuthatches make their homes in the hole of a tree, and with the exception of the *debris* which congregates whilst the woodland carpenter birds are at work, little material (if any) is used. The Kingfisher makes its untidy home in the river bank, the bones of fish constituting the furnishing of the apartment.

Among other ground-nesting birds, the Partridge and Pheasant use leaves wherewith to build a cup-like nest just sufficient to shelter the precious eggs, and the first-named always covers over her treasures until she commences to sit. Several female Pheasants often lay in the same nest, this being a polygamous bird in our country, and thus accounting for the curious phenomenon.

The joyous Lark does not make much pretence about home affairs—being too busily occupied soaring towards the blue ether above—the footprint of a horse or cow often serving as a nesting site, a few grasses being utilised as a lining. Two near relatives, the Tree Pipit and Meadow Pipit, construct nests under a tuft of grass, or upon some favourite moor or bank, and whilst they are loosely made, they exceed that of the Skylark, so far as concerns their general appearance.

Two arboreal birds, the Willow Wren and Chiff Chaff, build their dome-shaped nests upon, or very close to, the ground, although the two birds are so fond of the tree-tops, the homestead being nicely shielded from view, and each lined with a profusion of feathers.

The Nightingale, too, builds a deep nest quite close to the ground, and uses oak leaves very largely in its construction. When the female is sitting, her head and black eyes can only just be seen. Many of the other Warblers, such as the

Garden Warbler, Blackcap, Greater and Lesser Whitethroats, and Sedge Warbler, build quite frail nests, composed of fine, dry grasses, and perhaps lined with hair, but the Reed Warbler and the Marsh Warbler construct more substantial homes, and display considerable ingenuity in attaching them to the herbage in which they are secreted.

The Robin loves a tangled bank, and often contrives to hide its snug little homestead very successfully, but an obliging tomato tin, an old tin can, an old shoe, or even an old coat will not come amiss to this favourite bird. The Brown Wren, too, places its nest in many peculiar situations, such as in an old sack or other article, among a bundle of old horseshoes (which did *not*, by the way, bring the birds "good luck"), among bracken, in a furze bush, in an old fence or gate, and even in a scarecrow! The Wren seems to build more nests than are necessary, but exactly why this is has not yet been satisfactorily explained. Its near relative, the Gold Crest, suspends its beautiful little mossy cradle underneath the pliant branches of a Fir tree, whilst the Goldfinch, Chaffinch, Long-tailed Tit, and Hedge Sparrow largely use moss, lichens, hair, and feathers, and are to be numbered among the most wonderful feathered architects we possess.

Nobody can look at the globular ball of the

Long-tailed Tit, or the mossy home of the gay Chaffinch, without expressing admiration at such splendid homes made by a pair of birds, each tiny portion of the wonderful structure representing a separate journey.

There are many hedgerow-nesting birds, such as the Greenfinch, Bullfinch, Yellow Bunting, Song Thrush, Blackbird, and others, whose habitations need not be specially detailed, excepting to call attention to the shallow nest of the Bullfinch, composed mostly of fibrous roots, and the deep structure of the Song Thrush, lined with mud and rotten wood.

Rooks, Crows, and their relatives, as well as several birds of prey, resort to the same nest year after year, the homestead undergoing a sort of Spring-cleaning. The Sparrow Hawk rarely builds a nest of its own, taking possession of the disused homestead of a Jay, or some similar bird, whilst the thievish Magpie contrives to guard the entrance to its citadel by arching in the top portion with thorny sticks.

The Mute Swan makes a huge nest of various kinds of aquatic herbage, and this is necessary when one remembers that the green eggs are about the size of a small Rugby football.

Seabirds which resort to the rocky portion of our sea-girt coast rarely build a nest at all, and in this connection one may mention the Guillemot, which



Nest and Eggs of Ruff (female Reeve).

places one pear-shaped egg on the ledge of a bare rock.

Some seabirds, however, such as the Gull, the Cormorant, the Shag, and the Gannet, build both good and untidy nests, whilst others again, such as the Puffin and the Petrel, lay their one egg in a burrow in peaty soil, the excavation being made either by the bird itself, or the burrow of a Rabbit is taken possession of. The Petrels will also lay their one egg in a wall or rock.

The Moorhen and the Grebe often place their rush cradles on the bosom of the water. The latter bird frequently covers her eggs over when she leaves the nest, and the former bird contrives to build the homestead in such a way that it is placed on a solid and sure foundation to allow for any rise in the water. In flood time I have actually seen the nest of this bird floating along, it having been wrenched from its moorings by the force of the storm water.

The wandering Cuckoo, as we all know, does not build a nest of her own; the Doves construct frail stick nests in which to lay their two white eggs; Owls resort to church towers, hollow trees, the deserted nest of some other bird, and so on; the Swift builds its untidy nest under the roof of a house; the Swallow resorts to a similar habitat, as well as placing its shallow homestead in chimneys, barns, quarries, and other places; the

gentle House Martin builds its plaster cup under the eaves, and the Sand Martin bores a hole in a sandpit or river bank, and at the extremity of the tunnel places a profusion of straw, hay, and feathers in which to secrete its small pointed white eggs.

And so, although we have only briefly considered a few of the homesteads and nesting places of our British birds, sufficient has, perhaps, been written to show the importance of carefully considering and elaborating upon such a subject when setting out to study the habitations constructed by our feathered population.

IX. BIRDS' EGGS

Having devoted some amount of attention to the nests of our feathered population, we may now consider the eggs that are placed therein.

Carefully examined and intelligently studied, the eggs of our British birds present remarkable diversity of shape, size, colour, and markings. Another interesting phase of the subject to which attention may be directed, is the variation in the number of eggs laid, some kinds, such as the Guillemot and the Puffin, laying one egg only, and others, such as the Partridge and Pheasant, and even our small birds, the Tits, depositing a large number.



EGGS OF BRITISH BIRDS.

A. SONG THRUSH. B. NIGHTINGALE. C. BLACKBIRD. D. TREE CREEPER. E. KESTREL. F. BLACKCAP.
 G. NUTHATCH. H. SPARROW HAWK. I. BLUE TIT. J. GREAT TIT. K. CHIEF CHAFF.

Whilst, in many instances, the colouring matter upon a bird's egg harmonises very wonderfully with the surroundings in which it is placed; in many other cases, the egg stands out bold, and almost lurid. In this latter case, we may refer to the blue eggs of the Hedge Sparrow and the Song Thrush, when seen in the nest.

If we consider briefly the shape, size, colour, and markings upon a few typical examples of eggs laid by our own birds, we shall find many points that cannot fail to arouse and stimulate interest among both young and old people.

Whilst the eggs of some kinds of birds, such as the Doves, the Kingfisher, the Wryneck, the Petrels, the Owls, the Woodpeckers, and others, are round in shape and, curious to relate, all white and unspotted, or unmarked, in others the shape varies a good deal. It is interesting to notice, before we pass on, that the eggs of the species mentioned are not only white in colour and round in shape, but that all, more or less, are laid in dark places, and, with the exception of some of the Doves, in unexposed nests. This seems to point, in my mind, to some wonderful law or regulation, whereby those birds which resort to nesting habitats of a hidden description, such as the hole in a bank or a tree, do not have recourse to wasting either time or energy in distributing pigment over the surface of their egg-shells. It

is obvious that such ornamentation would serve no good purpose, when one remembers that the eggs are placed in dark corners out of sight, and, very often, out of reach.

To the number of birds thus distinguished are to be added several which have not, so far, come under review, because their eggs, although white and whitish, are not round in shape. In this respect, there may be mentioned the Sand Martin, who places her small pear-shaped egg in a cosy nest of feathers at the extremity of a tunnel in a sandpit; the Swift, who delights in taking possession of the roof of a house; the Puffin, who places her one solitary egg at the end of a burrow in peaty soil; and the Dipper, whose pure white pyriform eggs are snugly hidden in a well-arched-in nest near a burn or stream.

Birds which make little attempt at nest-building, and which place their treasures upon the ground, such as the Lapwing, Curlew, Ringed Plover, Sandpiper, Dunlin, Skylark, Snipe, Woodcock, and Common Partridge, are specially interesting, because of the distinct shape of the egg, the same tapering almost to a point. And there is reason for this, if we stop to inquire, for it will be seen that if eggs shaped in this manner are placed together, *with the small ends pointing towards each other*, the eggs take up far less room than they would do if deposited without method, and if they

happened to be of a different shape. The birds mentioned do not, as a rule, make a great attempt at constructing a homestead; therefore the eggs are not securely lodged in a nest wherein the parent sits and safely covers her treasures. Hence it comes about that the eggs must be so placed that the mother bird can cover them properly, and to the best advantage, and we find that they are so shaped and so placed as to enable this important operation to be successfully carried out.

The peculiar thing about it is, however, that the eggs of all birds which lay their eggs upon the ground are not pear-shaped, and in this respect we may mention those of the Nightjar, Pheasant, Corncrake, Stone Curlew, the Terns, and others. The eggs of the Nightjar and the Stone Curlew especially are very oval in shape, but the others mentioned are not so much distinguished in this way.

There are, of course, a number of birds, such as the Tree, Meadow, and Rock Pipits; the Chiff Chaff, Willow Wren, and Wood Wren; the Grasshopper Warbler and some of the Tits; the Robin, and very often the Corn Bunting, Yellow Bunting, and Yellow Wagtail; the Woodlark, Stonechat, Whinchat, and Wheatear, which all build on or close to the ground, but these small birds construct, for the most part, really good nests, and in these the eggs are snugly ensconced and duly

covered when the parent bird goes down upon them.

When we come to those kinds of birds which place their nests in hedgerows, bushes, trees, and other high places, we do not find a great deal of variation in the shape of the eggs, but, of course, there is diversity in size, colour, and markings.

The eggs of most of these birds are somewhat round, roundish, oval, or slightly pyriform; the eggs of the Kestrel and Sparrow Hawk will serve as examples of the first-named; those of the Magpie, Jackdaw, and Jay may be cited in illustration of the oval shape, and the last shape mentioned is well exemplified by the eggs of the Song Thrush, Chaffinch, Spotted Flycatcher, and others.

The size of the egg is largely influenced, of course, by the size of the bird. Small birds, we find, lay small eggs, but in considering this important phase of our subject the habits and environment must not be overlooked. Thus the Cuckoo is about the same size as the Sparrow Hawk (and a somewhat similar-looking bird), but, whereas the egg of the former is not larger than that of a Sparrow, the egg of the Hawk is as large as that of a Hen! There is just reason for this, as the Cuckoo places her egg in the nest of a small insectivorous bird, and, if her egg was as large as that of the Sparrow Hawk, it would not only be impossible for the female Cuckoo to deposit it in

many kinds of nests which she chooses, but the rightful owners of the nest would probably never tolerate an egg larger than a golf ball being thrust under their charge.

Birds which lay their eggs upon the bare ground are found to lay large eggs, as it is necessary that, as soon as the young are hatched, they should be able to run about and take care of themselves; thus the chicks are well developed when they emerge from their shelly home. Birds like the Long-tailed Tit, Brown and Golden-crested Wrens, Lesser Whitethroat, Chiff Chaff, Willow Wren, and others, lay a number of eggs; hence we find that they are very small, those of the Gold Crest being not much larger than a pea. Much more might be written of the interesting points that arise regarding the shape and size of birds' eggs, but it is with a view of encouraging the young naturalist to study these questions for himself, that this series of essays has been written, and we must leave him to take up the interesting story on his own account.

Little space is left to treat of the colour and markings of birds' eggs, but the subject is one that is perhaps more generally known than the great diversity that exists concerning their shape and size. Whilst some eggs, such as those of the Grebe, Gannet, Shag, Cormorant, and others that need not be detailed, soon become stained and

soiled; whilst those of the Wild Duck, Teal, Widgeon, Sheldrake, Pheasant, Partridge, Swan, Nightingale, Goose, Shearwater, and several more, are unmarked in any way; there are many kinds either beautiful in ground colour or remarkable for the rich markings that appear upon them.

What more would one wish for than the delicious shades of blue upon the eggs of the Hedge Sparrow, Song Thrush, and Starling; the remarkable gloss upon the porcelain-like shells of the Kingfisher and Woodpecker; the handsome splashes of red and brown upon the eggs of the Sparrow Hawk, Kestrel, and Merlin; the extraordinary diversity in the ground-colour and markings of the eggs of the Guillemot and the Gulls; these, and many others far too numerous to mention, are all interesting when closely studied.

The young zoologist has a wide field for research, even among our own British birds, for from the tiny pea-like egg of the Gold Crest to the large egg of the Mute Swan, which, as has been previously mentioned, may be likened to a small Rugby football, there is wide scope for original observation, such as might well engage, not only the study of an hour, a day, a week, a month, or even a year, but the devotion of a lifetime.

X. ANIMAL VOICES

Prominent among our animal folk, so far as concerns their voices, are our feathered friends. Indeed, when considering many of the chief factors which go to make the study of animal life so interesting, it will be found that birds occupy, and justly, a considerable share of attention. Their animate forms, winning ways, wonderful home-steads and eggs, devotion to their young, value to mankind, powers upon the wing, migration movements, and beautiful songs, cannot fail to arrest the attention of those who seek knowledge concerning the animal inhabitants of our country.

But before we come to the songs and notes of birds, let us consider for a little while the nature of the voices of other animals whose claims in this respect are very often too generally overlooked. Among mammals, the Bats are particularly mute, and with the exception of a squeak (for the want of a better word), I have rarely heard these weird flying creatures resort to any other mode of expressing their feelings.

That the Hedgehog can squeal loudly I have often experienced, more especially when the animal has been firmly gripped in the clutches of a cruel-toothed trap; the Mole seems a sort of silent underground navy; as regards the muteness a

like remark applies to the Shrews; but the Wild Cat (as we all know from acquaintance at night-time with our own feline marauders) can give voice in no uncertain manner, and can mew, wail, and swear in no half-hearted way.

To hear a Fox bark during the shadowy stillness of the night is well worth listening for, but his carnivorous relatives, the Stoat, Weasel, and Badger, do not appear to be particularly desirous of uttering any vocal sound worthy of the name.

The Squirrel, too, mostly keeps his secrets to himself, gay little wood-sprite that he is, whilst the Dormouse, when he is not slumbering, is too busy with family cares to trouble about learning his A B C. Rats and Mice squeal and scamper; the Hare appears solitary in both disposition and voice, but the Rabbit screams loudly when occasion demands it, especially when it is pursued by a Stoat, or caught in the clutches of a trap or snare. Many a time I have released from a trap one of these woodland rovers, for the pathetic cry, as of some one in great distress, was more than I could stand during my quiet pilgrimage through a favourite belt of woodland.

The Deer belong to the mute animals, whilst the Whale, Porpoise, and Dolphin tell their secrets under cover of the ocean's depths, and of their vocal efforts we are woefully ignorant.

With the exception of the birds—which we next

come to in the scale of British animal life—little need, or indeed could, be written, for the great world of insect life is mostly silent. Mention need only be made of the sibilous notes of the Grasshoppers and Crickets—which are not vocal efforts, the sound being made by a sort of fiddle and bow arrangement upon the body—and the buzzing of the Bees and Wasps; the croak of the Frog and Toad also deserve mention; whilst the apparent muteness of Fishes and the lower forms of animal life are worthy of note.

For beauty of voice, our bird friends, of course, excel beyond all other animals, and although some efforts are harsh and discordant, others, as is so well known, are characterised by their remarkable loveliness. The Jay screams harshly when disturbed; the beautiful Kingfisher utters a sharp note which the young naturalist must be keen to detect; the Doves coo; the Warblers, such as the Nightingale, Garden Warbler, and Blackcap, are to be reckoned among our finest songsters; and the Blackbird, Song Thrush, Skylark, Tree Pipit, Meadow Pipit, and others that need not be mentioned are capable of emitting songs that are the joy of all those who have an ear which can appreciate the music of the feathered choir. Some few birds sing by night; the great majority, however, sing by day, and are heard to best advantage in the early morning.

The plaintive note of the wandering Cuckoo and the gurgling response of the female bird; the loud laugh of the Green Woodpecker, and the "chee, chee, chee," of the Lesser-spotted species; the "twit, wit, wit," of the Nuthatch, and the curious notes of the mimicking Starling—these, and many more, are worthy of both note and comparison.

Beyond their songs, their soul-inspiring minstrelsy, birds utter calls, cries, and other notes, deserving of close study, for by means of them an unseen feathered being may be located and identified, and it is not necessary to shoot or catch the wee mite for the purpose of identification.

By their flight, as well as by reason of the vocal utterances, birds can, with few exceptions, be easily recognised, and when, as so often happens, if patience and woodcraft be exercised, one is able to get on intimate terms of acquaintance with them, the many interesting points that occur behind the veil in birdland go to make the study of these winged treasures of our land a most fascinating and pleasant hobby.

If a bird finds out by experience that no harm is likely to occur to it, it is remarkable to observe how conscious of protection it becomes, and the little secrets one is let into by a close and careful watch of the tenants of Birdland are delightful to notice, and make happy red-letter days, not readily effaced from memory.

We have mentioned, in passing rapidly through some of the chief groups of our own British fauna, the muteness which a large number of animals display. How, then, we may ask ourselves, do these creatures communicate one with the other? Have they a language of their own, which is unheard by the human ear, or do they possess means of communication of which we at present are unaware, and cannot comprehend?

We know, for example, that many kinds of insects are largely aided by the wonderful structure of their antennæ, or feelers, but there are many other animals which do not possess these remarkable organs, which, it would seem, must resort to some other means of communicating with one another that we do not at present understand!

That birds, and several other kinds of wild creatures, do make use of various calls, cries, and signals, those of us who have penetrated into a few of the secrets of Nature can ably testify, but there seems a great poverty of knowledge concerning the vocal powers of some kinds of animals occupying both high and low places in the scale, and to unravel some of these secrets would prove an interesting and congenial occupation, to which the attention of all young people, and their elders, too, might be directed, with both pleasure and profit.

XI. THE USEFULNESS OF ANIMALS

Once more we may run through the chief groups of animals which occupy a place upon the British list, and on this occasion we are concerned with their usefulness.

We start, of course, with the Mammals, the highest group of all, and the Bats, as usual, are placed at the head. These mostly nocturnal creatures live entirely upon insects of various kinds, and perform useful work in ridding us of an enormous quantity of insect life. Beetles and Moths seem particularly relished by Bats, but judging by the manner in which they so quickly secure food, all kinds of insects which populate the air find a warm reception awaiting them from those industrious mammals.

There are, of course, a number of animals whose value and usefulness can only be judged according to the part they play in preserving the balance of Nature. Thus the Hedgehog is an unmitigated nuisance where game-birds and poultry are found, but elsewhere—and at such times that the eggs of the former are not forthcoming—the Hedgehog exists upon Insects, Worms, Frogs, Toads, Slugs, Snails, and other creatures.

The Mole in some districts prevents the land from being waterlogged by means of its natural

tunnellings, and it also feeds upon such creatures as Earthworms, the injurious larva of the Crane Fly, or Daddy Longlegs, as well as Mice, Shrews, small Reptiles, and Frogs.

Passing by the Shrews, the Wild Cat, and the Fox, which do not call for particular mention so far as concerns their usefulness, brings us within hail of the Stoat and Weasel. The gamekeeper will tell you that these are two of his worst four-footed enemies, but it should be borne in mind that the Stoat largely helps to keep down the Rabbit, and the Weasel is a match for the detestable Brown Rat. Game-preserving is a luxury and not a necessity, and one should judge the character of an animal from its status as a wild creature, and not from the standpoint of harm which may be done in some direction where man, by his own selfish interests, has upset the balance of Nature, and throws the blame very often upon animals which are strictly speaking "not guilty."

In this section a word or two may be stated in favour of our ocean-loving Mammal, the Whale, for he supplies us with several useful things which have resulted in special expeditions setting out to track him. Oil, ambergris, and whalebone are obtained from this giant of the sea, with the inevitable result that in many of our seas it has become considerably lessened in numbers.

Much might be written of the usefulness of birds,

from the points of view of destroyers of weed and insect pests, ridders of carrion, and natural balance-keepers; but perhaps the less said the better concerning their mutilated carcasses, as seen in articles of feminine adornment! I always prefer to see a woman's hat trimmed with lace, ribbon, or flowers, and whilst the latter can at best be only a poor representation of the plant, the distorted form of a bird, once a living and, let us hope, happy creature, is one of the most grotesque caricatures imaginable. I often think that if women were bird-students, they would soon despise the use of either birds or their feathers as so-called ornaments or trimmings, for even a rudimentary knowledge of the form of the animate bird is sufficient to disgust those who realise the poor apology for the living creature so often seen hideously displayed in a woman's hat.

It must not be supposed, however, that all kinds of birds are of service to mankind. Many, it is true, such as the Warblers, which live almost exclusively upon insects, are practically indispensable for the comfort of human existence. Some feed both upon insects and weed seeds; others may be of some benefit to mankind, but their good deeds are not nearly so prominent, nor so well known, as those of their fellows. There are others which, in man's often limited vision, do neither good nor harm, and yet others again which

are stated to perform no service whatsoever. Lastly there are those which, *it is said*, do more harm than good, but it is a difficult problem to solve, and very often a hasty decision is come to, which, on reflection, frequently proves incorrect.

Of our feathered policemen, the Owls, all those who know their true life history cannot fail to have the highest opinion, whilst there are many other species which, by preying upon small birds or other animals, help to keep in check *by natural means* Nature's balance, and so perform useful deeds for which they are rarely given credit.

And even if we considered these winged creatures from the point of view of making our country a brighter and a happier land in which to sojourn, surely they are entitled to a higher place in our affections. Some day, and that not very far distant, I am of opinion that birds will be thought a good deal more of than they are to-day, for once a person becomes on intimate terms, so to speak, with a wild bird, his interest is at once awakened, and he takes a personal pride in protecting and preserving his friend of the countryside.

Much remains to be accomplished, however, before our feathered creatures receive their just deserts. How many there are who value their cherries and strawberries more than the birds which, during the greater part of the year, cheer one by their company and songs, and help to rid the land

of pests which man could not, if he tried, eradicate. No tool or poison was ever invented so instrumental in finding and despatching an obnoxious pest as a bird's beak, but it is not altogether on this point of usefulness that I make an appeal on behalf of our bird friends. Surely they have a right to occupy a place in the world of life, and so long as they are found to be of service, and their presence makes our land a happier and nicer place in which to live, so long should these bright tenants of our fields and hedgerows, woods and meadows, lanes, streams, and gardens, be encouraged and protected.

There are still, however, many people who, for some callous reason best known to themselves, perpetrate considerable harm among our wild birds. The culprits are not young people alone, and it has always seemed a mystery to me why such cruelty as one sees should be meted out to little sensitive beings, whose every particle throbs and pulsates, and who, in their little way, experience joy and sorrow, who exhibit remarkable evidence of industry, devotion, attachment, and even love. What we want is to spread abroad the spirit of justice and mercy towards these wild creatures, for, as Miss Corelli has so well and so wisely said, with justice dwells honour, and with mercy, love.

Passing by our bird friends after this dissertation



1. Greenfinch.
2. Chaffinch.
3. Goldfinch.



1. Hooded Crow.
2. Jackdaw.
3. Carrion Crow.



Nest of Lapwing, showing Odd-Size Eggs.

on their protection, brings us to the Reptiles and Amphibians, and whilst some of these are only to be regarded as balance-keepers, a word should be written in favour of the Frog and Toad, for they are both almost wholly insect-eaters, and do an immense amount of good.

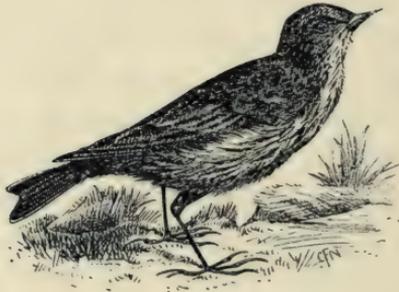
Fishes, with the exception, perhaps, of affording us wholesome food, do not come under the category of animals prominently useful to mankind, and a similar remark may be applied to the Crayfish, Crabs, Lobsters, Shrimps, and their allies.

Spiders, as all sensible people know, are not only wonderful, but distinctly useful creatures, and there are, after them, a large number of insects which perform useful service.

Of these latter much might be written, but it must suffice for us to mention the honey we obtain from the Bees; the silk from the Silkworm Moth; the Beetles, which so ably perform the part of scavengers, and the Sexton Beetles, which so well carry out the profession of insect-undertakers; the Lacewing Fly and the Ladybird, which prey upon the detestable Green Fly, and are to be reckoned among the rosarian's best friends; the Ichneumon Flies, which, by laying their eggs in the egg or larva of an injurious insect, carry out good work by getting rid of their host; and last, but by no means least, the great usefulness of many

kinds of insect folk in carrying pollen from one flower to another (even although the act is caused through selfish motives), and so making possible the fertilisation of various plants and trees which depend upon this insect agency.

Among the Mollusca, there are several kinds of shellfish of use as food; the Earthworm has largely been responsible for the production of the beautiful green meadows of the England of to-day; the Porifera or Sponges are distinctly useful animals, as we all know; and in our fresh and salt waters there is an abundance of animal life which serves many a useful purpose in the economy of Nature.



CHAPTER VII

HOW TO STALK WILD ANIMALS

IN the section of our book that is devoted to Birds, hints are given concerning what I consider to be the best methods of observing them, so that in this chapter our feathered friends need not be specially treated of.

This being the case, there are, with the exception of Insects, really very few British animals which can be stalked to any appreciable extent, more especially if we leave out of consideration the animal life to be found in our ponds, rivers, and seas.

The number of different species of Mammals, Reptiles, and Amphibians found in this country is undoubtedly somewhat restricted, and chief attention will probably be devoted by the young naturalist-stalker to the feathered population. There are, however, some animals, other than Birds, that will amply repay stalking and provide a fund of interesting and amusing recreation out of doors.

A few notes, therefore, concerning how and when and where to stalk these animals may be of service, after which the sections devoted to the

four kinds of wild creatures dealt with in our next chapter can be consulted with what is hoped will prove to be both pleasure and profit.

It is essential that to become a successful stalker of animals one should possess a good knowledge of the wild folk it is intended to stalk, and such knowledge can only be acquired by years of careful and painstaking observation.

A real good plan to work upon is to make up your mind to explore as far as possible the fauna and flora of a given district. By this means you will become fairly intimately acquainted with the local animals and plants, and be enabled to prepare a list that some day may prove of scientific value. Let me illustrate my meaning.

I remember a district in which I once resided where lists were given to me of the whole of the birds that were *believed* to nest or occur there, regularly or occasionally. On looking over the list I was struck with the fewness of the species enumerated, knowing, from past experience elsewhere, that the locality should be admirably suited for the occurrence of a number of birds whose names I failed to recognise upon the official schedules presented to me.

I at once set to work to observe the birds of the district, keeping systematic and accurate data concerning each new species that came under my notice, with the result that in less than a year I

had the satisfaction of adding nearly sixty different kinds of birds that had, for some unaccountable reason, remained unscheduled!

I believe that there is a real good work to be accomplished in the preparation of local lists of animals and plants throughout the whole country, for both are repeatedly occurring where they had previously been overlooked, and in this good work the Boy Scout and the young naturalist can, and indeed should, play an important part.

I need hardly remind you to keep a Natural History diary in which to record the movements of animals, the dates of their coming and going, their breeding or nesting, feeding times, habits, nature of the food, and various other points that need not be detailed; and with regard to plants, of course records will be kept of where and when a plant was found, the nature of the soil, the abundance or scarcity, flowering and fruiting times, as well as the date of foliation, notes on fertilisation, what animals (if any) feed upon it, and so on.

Bear in mind that no record need appear too trifling, for in after years what seemed at the time a trivial entry may prove to be of the greatest value.

I take it most of you will evince the keenest pleasure in stalking wild animals with a field-glass or camera, and that few, if any, of you will lend your aid in killing any animal that has

not been proved to do more harm than good and requires keeping down. In this respect I might specially mention that distasteful pest the Brown Rat, but I would appeal to your manly instincts not to cause any creature needless pain and to kill, if needs be, any wild tenant of the countryside as humanely as possible.

There is, however, little, if any, need for you to interfere with the balance of Nature, and if your desires be similar to my own you will not find any necessity to tamper with such balance, for it has too often proved already to have become very much upset through unwise interference by mankind.

Some wild animals, you will find as you come to know them, may be stalked fairly easily; some of them become quite as curious concerning the stalker as the latter is of the stalked! I could tell you several instances of Rabbits and Field Mice that have, when I remained perfectly quiet, come sniffing quite closely to me, wondering whoever and whatever I was. As a result, I have spent many enjoyable interviews with these country folk and been able to observe them at close quarters as living and, let us hope, as happy creatures.

Some stalking must be done under cover of darkness, some on bright days, some when the sun is hidden by the clouds; some animal folk may

only be discovered when it is raining, some during the wealth of Summer, others when the blast of Winter is sounding through the land. Some must be sought for on the mountain, the downs, or the hillside, others in the valley.

It is a good plan to become acquainted with the haunts and habits of an animal and then to search for the species in an environment in which it has not previously been encountered, but in which, owing to your knowledge of the species, you are of opinion it should occur.

In this way the stalking becomes positively exciting, and when eventually the chase is successful, and you have your wild friend within range of field-glass or camera, you will be amply repaid for all the trouble to which you have been put. Then, having discovered it, you will return over and over again to watch its further movements.

I remember hearing once of a naturalist who wished to stalk and photograph a Stoat that was stated to be in the habit of passing a certain spot several times a day. On the face of it, perhaps, it would seem an easy thing to go to the spot and wait and watch. So it would be, but an amount of patience is necessary, and it was only as a result of many journeys that my friend at last secured a splendid picture of the wild animal after whom he had gone a-hunting.

I knew of another naturalist who was anxious to stalk a certain bird and take a series of photographs. He was successful in his quest because, at the outset, he had made up his mind—like Monsieur Blériot when he successfully crossed the English Channel recently—that if the feat was capable of accomplishment, he was the man who was going to do it.

That man had to walk over 150 miles to successfully complete the small series of photos that he desired to have, but success attended his efforts, and it was afterwards discovered that he had unexpectedly proved, by means of his camera and experiments, a thorny problem in the bird world that had been incapable of solution for over one hundred years!

You will find that early morning and towards evening are excellent times for stalking several kinds of animals, for then it is that they usually come from their hiding-places in search of food. Most enjoyable times may be spent in the early morning when the rest of the world is asleep, and no matter how early you may steal softly down some country lane, through a meadow or wood, or by some enchanted river, you will find that some wild creature has forestalled you and risen from its bed much earlier than you.

I have often tried to rise earlier than several kinds of birds and other creatures, but have found

that they had anticipated me considerably. The Crow is an adept at that kind of game, for I have always noticed his sable majesty was out and about long before I could rouse myself from slumber.

That reminds me to advise you to wear the oldest clothes you possess when stalking. Never mind the remarks of ignorant loafers who may make rude comments on your get-up as you pass by. I have often overheard that I was a fit candidate for the nearest lunatic asylum when I have been staring in what appeared to my observers as a half-dazed sort of manner at apparently nothing! Yes, wear old clothes, discoloured with age, for you will have some curious vicissitudes to pass through, and take care also to be well shod. There is nothing so distasteful as getting wet feet miles from home and early in the day.

Get right away in the heart of the country if you can, where nought is to be heard but the sounds of the living creatures in their native wilds, and wherever you go I fervently wish you successful stalking.



CHAPTER VIII

WILD ANIMALS WORTH STALKING

I. THE BADGER

THIS is the largest truly wild carnivorous animal we have in Great Britain, and one which through long ages seems to have been well able to hold his own against the persecution of man, for he is found in nearly every county in England, and is probably as numerous now as he was one hundred years ago. It is doubtful if Badgers were ever found in big numbers anywhere, although if left to breed where the soil is suitable for burrowing they form into small colonies, some of which have been known to number as many as eight adult animals, but, as a general rule, they are found in pairs. Where they live in colonies each pair occupies a separate chamber.

Badgers pair off when about nine months old and remain together as long as they both live. This is rather singular, for most animals and birds that pair dissolve partnership after the breeding season is over, and, even if both survive, the chances are that the next breeding season the pairs are not the same. With Badgers this is not so.

In at least one instance I have good proof of this. A friend of mine dug out an old pair and removed them to quite a strange neighbourhood, where they were wanted for the purpose of making earths for Foxes. They were not put down together, but in big Rabbit earths about eight miles apart. Three years later the same pair were dug out ten miles from where either of them had been turned down. They were in an earth that had been occupied by Badgers for many years, and they had probably turned the old tenants out. They were known to be the same pair as recognisable marks had been placed upon the bodies of both animals.

On another occasion a pair were dug out, which were handed over to the local ratcatcher on the condition that he would not dispose of them in the neighbourhood with a chance of them getting back to their old quarters again. For security during the first night he hung them up in a sack in his cottage, which was of the old wattle and dab type. The next morning to his surprise they had got out of the sack and scratched a hole clean through the wall of his cottage and escaped. Eighteen months hence a pair were dug out which answered exactly in weight and appearance to the escaped animals, and it was believed at the time that these were the same animals, although there was no particular marks to go by.

As regards the weight of the Badger, few wild

animals vary so much. Some adults handled by my gamekeeper friends did not go more than sixteen pounds, while others have turned the scale at forty pounds. The males, as a rule, are the largest, but pairs have often been found where it has been the reverse.

The Badger is a most cleanly animal both in person and about his home, for, unlike the Fox, he will not tolerate filth to lie about his earth. He is often house cleaning, as it were, by clearing out soil that may have become tainted in any way. He always deposits his excrement in little pits he digs for the purpose some distance from home.

The Badger is said to be very closely related to the Bear, but in many respects he resembles the Wild Boar too. He is carnivorous without doubt, but I always look on him as more of an insectivorous animal. His bill of fare consists of young Rabbits, young birds, Cockroaches, Grasshoppers, and nearly all kinds of insects to be found on the land, as well as various roots, eggs, honey of the Bumble Bee and Wasps' nests, wild fruits, in fact, there is little that comes amiss to him in the small way. I never knew him to kill anything larger than a young Rabbit, so that from a game preserver's point of view he does no harm, and this is a most important point to remember in view of the animals that are sometimes killed.

Some are of the opinion that he is torpid during

the Winter months, but such is not the case, at any rate in England, although he is no doubt less active during the cold months and capable of doing without food for a long time. I have often known him to remain in his earth during snow or severe weather for a fortnight at a time, but as soon as the weather became mild he would be out and about his business as usual. As proof of the long period he can do without food, a few years ago a keeper I know was engaged in digging out a very big earth supposed to have been inhabited by mangy Foxes. Before starting to dig a Terrier dog was put in, and Badgers were found to be in possession. This earth was very deep and in a bed of chalk. After digging for over three weeks an old pair of Badgers were taken out, the boar weighing thirty-two pounds and the sow twenty-five pounds. Both were in splendid condition, although they had never been allowed to get out from the time the digging was started, and this was during February, and clearly shows they are capable of doing without food for a long period at that time of year.

We hear of various means of capture, some of which, to say the least, are only imaginary, for no animal is better able to take care of himself than the Badger. I have heard of a sack being placed in the mouth of his earth while the animal was out feeding, and then he was located and driven in

with dogs with nothing more to do but tie up the sack! To any one who knows Brock this sounds very much like putting a pinch of salt on his tail. I have known him to be caught by placing a purse net over the earth, but this more often fails than not, unless Master Badger is very hard pressed, owing to his keen sense of smell, and even if he is taken in this way it is only the matter of a few seconds when he will cut his way out. He is sometimes caught in an ordinary Rabbit trap, but this is by no means an easy matter, for he has all sorts of dodges to avoid getting his toes pinched. Traps have been set at the entrance to his earth, and I have known him to roll right over them; at other times he will enlarge the entrance to pass them safely. The most successful way of catching him that I know of is in wire snares set in the runs he makes through the underwood to and from his earth. This is done by fixing the wire on the end of a Nut-hazel or Ash pole and bending it down in such a way that, when he gets his head through the wire and struggles to free himself, the pole is released and the wire secures him.

To dig him out of his earth is not often an easy matter, even with the aid of dogs to locate him, for he is such an excellent digger that he can work his way on as fast as one can dig, especially in light soil.

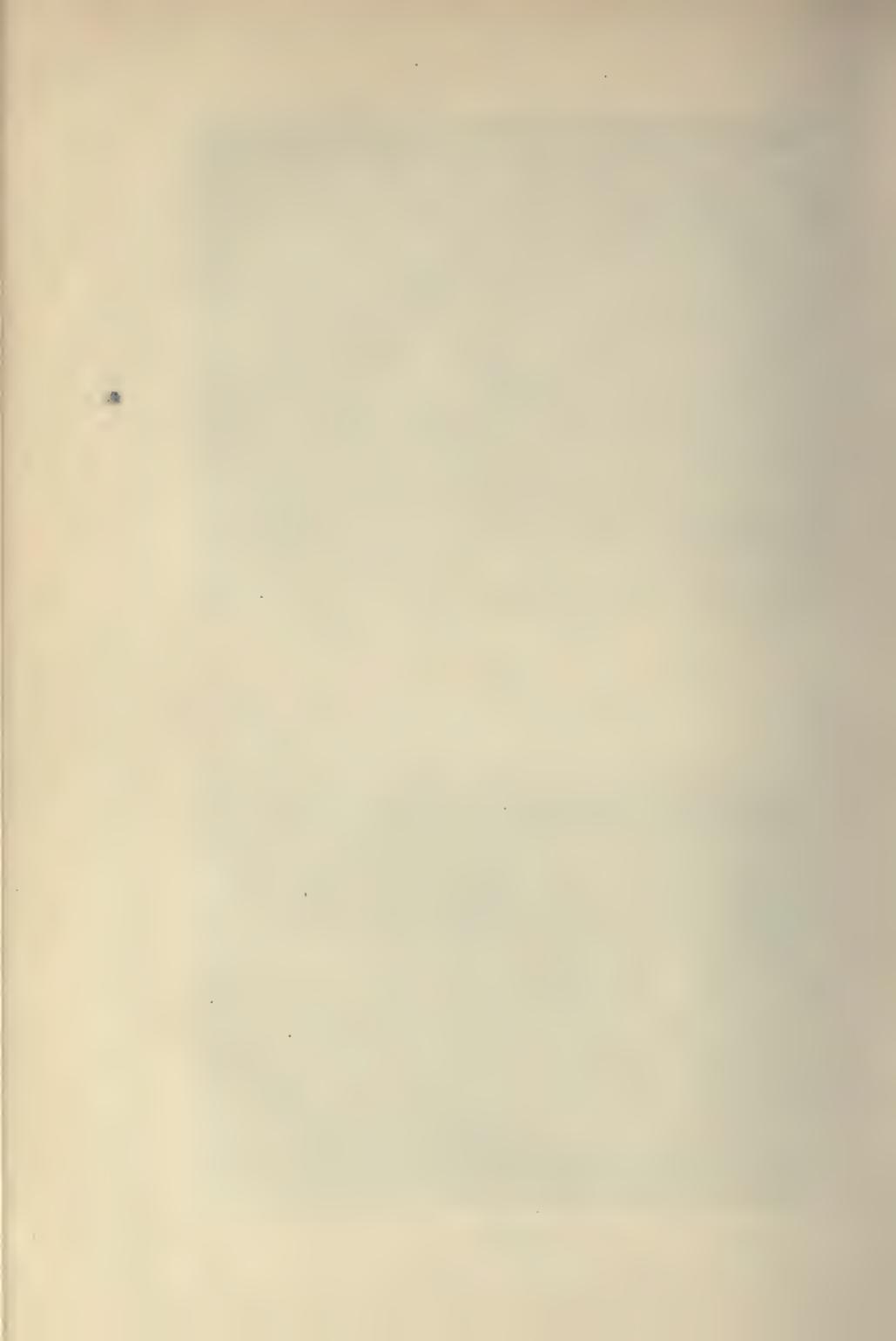
Dogs that are good enough to fight and kill a



Badger.



Red Deer.



Fox stand but a poor chance with Brock underground, for once he can get hold the dog will probably soon be disabled. His strength of jaw is very great, and when attacked he has a way of protecting himself by rounding up his body much in the same way as the Hedgehog does, his head being completely hidden under his body. When attacked in this position he is at a very great advantage, for little impression can be made on the tough hide exposed, and by an underneath action he will manage to get hold of the attacking party—if a Terrier, this is usually by the throat or bottom jaw.

Badgers have their young during the Spring about April. The period of gestation is about nine weeks, and three to six young ones are produced at a birth. The young are born blind, and remain in the earth until about six weeks old before they are able to toddle out. They are dependent on the parents much longer than Fox cubs. For the first three weeks or a month after the young are born the mother spends most of her time with the family, and depends on the old boar to bring her food. The young are nine or ten weeks old before they do anything in the way of finding food for themselves. About this time much is done in the way of enlarging the earth if it is a new one with only one chamber; other chambers have to be made for the accommodation

of the growing family, and here they remain until the youngsters begin to think of matrimony, when they have to make a home for themselves elsewhere if the earth is not sufficiently large for more than one pair.

Badgers when young are easily tamed. The length of life is from ten to twelve years.

It should be distinctly understood that the particulars given concerning the catching of this most interesting British animal are merely set out for the purpose of indicating traits in its character which would otherwise escape detection. It is hoped and believed that no young animal stalker will be desirous of reducing the numbers of one of our most useful and interesting Mammals.

II. THE FOX

Much has been written of the Fox by various sportsmen, gamekeepers, and others. We have had his biography and we have had his autobiography. Many informative and highly interesting and useful contributions have been made upon this remarkable Mammal, but in the present essay I have endeavoured to break somewhat fresh ground and to write up the personal experiences of some of my gamekeeper friends. I am especially indebted to Mr. Thos. Bamford, head-keeper to the Earl of Clarendon, for most of the data

hereinafter recorded. I have the greatest respect and admiration for the observations made by Mr. Bamford, as I have known him for a number of years as a most astute and careful recorder of animal life. At my request he has been good enough to afford me much information about Reynard unobtainable through any other source, and it is only courteous thus early to acknowledge his invaluable assistance.

The period of gestation of the Fox is, roughly speaking, eight weeks. Cubs may be expected any time between February 15 and March 15, although I have known two instances of cubs being born as early as the first week in January. This may, however, be considered exceptionally early, and a friend of mine once dug out a vixen with a litter of five cubs not more than two or three days old as late as April 17. The majority of cubs, no doubt, arrive during March.

Litters of five and six are the usual number, although I have known as many as nine in one lot and as few as three in several others. They, like nearly all carnivorous animals, are born blind and remain so for about eight days. The vixen is a very poor navvy, and, this being so, has to depend to a great extent upon the exertions of the Badger and the Rabbit for the making of a home for herself and family. She never starts an "earth" on her own account, no matter how easy

digging the soil may be, but always takes possession of one made by a Badger, or, in a neighbourhood where this animal does not exist, takes to a Rabbit burrow, which she enlarges by following up and clearing out the passages. In some localities where there are no Badgers, and the soil is too heavy and wet for the Rabbit to make strong burrows, vixens do not attempt to breed underground, but lay up their cubs in a stub root of a tree, or in any dry, suitable place.

Some years ago a keeper acquaintance of mine had occasion to visit some men who were cutting underwood in a big wood in the Woodland Pytchley country. At the time of his visit the men were sitting round a big fire eating their dinner. While speaking to them, he noticed a slight movement in the dry leaves in a big Ash stub only about five yards distant from where the men were sitting. He stepped forward to see what the stub contained, and there found six cubs only a few hours old. The poles had been removed that morning from the stub without the men noticing anything there. I may add this was February 5, and frozen snow three inches deep was on the ground at the time. My friend was very anxious as to the safety of this young family, as Foxes were strictly preserved in the district. He therefore at once had the fire put out and the woodcutting operations put a stop to in that part

of the wood. He was curious to know what steps the mother would take in this disturbed state of home surroundings, and in consequence sent for his field-glasses and kept watch, for he felt sure she would not be absent long if she had any regard for her youngsters, especially during such severe weather. He had not long to wait when he saw her come to the edge of the uncut wood, take a general survey round, and, finding all quiet, she very cautiously took half a dozen circles round the stub, finally entering, curling herself up, and suckling her cubs in the same way a bitch would her puppies. The following morning he again went to the spot and found them gone. No doubt the vixen had removed them to a more quiet part of the wood.

It has been said that the offspring of stub-bred Foxes will always breed *above ground*, but I have had many opportunities of proving this not to be so, for, after removing stub-bred Foxes into a country where there are plenty of earths, my keeper friends tell me they go to ground and breed there as freely as the natives do. I think this is proof that stub-bred Foxes are so only by compulsion and not from choice.

There is no doubt about Foxes pairing off during the breeding season, for this is often shown by the fact that where hounds find a vixen in the early Spring months a Dog Fox is there too. If not

actually with her, he is almost sure to be "viewed away" from the same covert. That the pair both take an active part in preparing a home for the expected family is also plainly to be seen by the two sizes of pads on the fresh-drawn soil at the entrance to the earth.

From observations made over a series of years, it appears that the Dog Fox does the greater part of the work of clearing out and making ready the earth. After the cubs are born he still continues to be a helpmate to the vixen by providing her with food. Some keepers say he will bring up the family by himself should the mother get killed. This may be so in some cases, but Mr. Bamford tells me that he has never known a single instance where this has taken place, although he has seen many litters left motherless at various ages. Of course, there is no question as to the result if the vixen loses her life during the time the cubs are entirely dependent on the support they get from her body. For at least ten weeks they are quite incapable of getting their own living, and are supported by both parents.

The Dog Fox does the greater part towards getting food, but in the event of the vixen being killed he has no further interest in the family, and leaves them to starve to death. This is not so if death overtakes the Dog, for the mother will keep the family going single-handed. While watching

the Dog Fox bring food, he has been seen to leave it on the earth, but more often he meets the vixen some distance away with it.

One evening a friend of mine was going to visit a Fox earth where there were cubs two miles distant. On his way, and not more than one hundred yards from his house, a white Pheasant was sitting on her eggs in a hedge-bottom. He gave a glance and saw her there as he passed. He had not been in sight of the earth more than two minutes when he saw the vixen come out and trot down the wood ride in the direction he had come from. To his surprise and annoyance in less than five minutes she returned with his white Pheasant in her mouth. This clearly shows that the Dog Fox killed the bird immediately after the keeper had left her on the nest, and met the vixen with it.

Upon my friend's return, he not only found the bird gone but the eggs too! He, no doubt, had "champed" these up, and would probably disgorge them for the vixen when delivering up the bird.

It is very curious that a vixen with cubs nearly always gets the food supply from a distance, although there may be easy means of getting it near the earth. Mr. Bamford tells me that he has many times seen Pheasants and Partridges sitting on their eggs within a hundred yards without being molested, while in a neighbourhood a

mile or two away every bird has been taken as soon as she started sitting! Rabbits, too, in plenty were occupying burrows within a few yards from the earth, yet these were not interfered with. Why this is so appears difficult to explain, unless it is that there shall be a good supply of food close at home when the cubs are first learning to catch the same on their own account. One good authority on Foxes says he is of opinion the vixen does not kill her prey near home to avoid causing any disturbance which might act as an advertisement to disclose the situation of her earth, and perhaps lead to her own destruction. There may be something in this; if so, she quite forgets the advertising business when bringing birds from a distance, for feathers are strewn freely around, which makes nothing more easy to be seen than an earth where cubs are present.

Often the slightest interference with a litter of cubs will be the means of causing the vixen to shift them. Sometimes this happens as a result of a person merely walking over the earth! Another earth is generally in readiness not far away in the event of anything turning up of a disturbing nature. Some vixens are constantly shifting their cubs for no apparent reason, while others are reared where they are born.

I once knew of a vixen drawing an earth ready

for cubs near the boundary of an estate, the owner of which did not look on Foxes as desirable visitors, much less as residents. For this reason the keeper was anxious to shift her into an earth in the same wood which had previously been occupied by Foxes as a breeding earth and on more welcome ground. He took a Terrier and bolted her. The keeper took the precaution to taint the earth thoroughly inside and out with renardine, an offensive preparation, the manufacturers of which say no Fox will approach! He also well stopped the earth, but upon his return the next morning found she had torn it open and was working freely. He tainted and stopped it up again, and this was repeated every day for ten days, but eventually it had to be given up, for, in spite of his efforts, she would persist in opening and working the earth each night even after the cubs were born and she had the chance to move them. This, of course, was a very exceptional case and proof of how far sometimes one vixen may deviate from the general rule.

Vixens do not often move their cubs during the first month of their existence unless they are disturbed in some way. The means the mother employs for their removal is by carrying them in her mouth one at a time, just in the same way a Cat would carry her kitten. She can do this up to the time they are six weeks old. After this

they are able to follow her any reasonable distance. When cubs are a month or six weeks old it is not unusual for the vixen to distribute them about into two or three different earths, two or three probably in each, and sometimes these earths may be as far as a mile apart, but more often quite close. Much depends on what there is available.

Vixens prove themselves very devoted mothers when the lives of their youngsters are at stake, although there is little to fear beyond man and dogs. It is curious, but nevertheless a fact, that few Terriers will face and fight a vixen with cubs. A Terrier used for bolting Foxes, and perhaps good enough to kill one at other times, will seldom tackle a vixen with cubs; in fact, it is she who becomes the attacking party, and not the attacked, as was the case before the cares of a family rested upon her.

Once, while out ferreting, a keeper came across a big sand-earth, which a Terrier seemed very keen to enter. Thinking it had probably been worked by a Badger, the dog was let go, but before he had got a yard in he pushed himself out backwards in a great hurry, followed by a vixen who had only just laid up her cubs there. So determined did her ladyship seem to drive him quite off the premises that she followed him for thirty yards out. This same Terrier had previously, and has since, bolted many Foxes.



Mother Fox and Cub.



A Tame Fox Cub.

Another curious matter is the Fox and the Badger living on such neighbourly terms as they do together (often bringing up their families in the same earth), especially when one considers how totally different the two animals are in their habits. The Fox is, perhaps, not dirty in person, but is naturally very untidy in and about his home, for he will leave the decaying remains of his prey about the earth in the most filthy manner, whereas the Badger is particularly clean both in person and home.

Nothing seems to come amiss to the Fox in his bill of fare. Among some of the most common of his prey are fowls of every variety from the farmyard, Pheasants, Partridges, Hares, Rabbits, Rats, Field-mice, Moles, young Rooks, Pigeons, small Birds, Cockroaches, Fruits and Berries (especially Blackberries), and Wild Cherries.

It will be seen that he, like most other animals, has his good and bad points. Looking at him from a gamekeeper's point of view, it must be said his bad qualities far overbalance his good ones. At the same time he is an excellent vermin killer, and it may not be generally known, even by those who know him best and often paint him blackest, that he is a deadly enemy both to the Stoat and Weasel. He has a bad reputation as a fowl stealer, some part of which is well earned, for there is nothing he seems to enjoy more than a chicken,

but in this respect he needs a broad back to bear all the charges brought against him, especially in a hunting district where a substantial poultry fund exists for damage done by stray Dogs, Cats, and vermin with which he is often branded!

It must be admitted he does seem to take a delight in slaughter, for I have known a Dog Fox kill more Pheasants and Fowls in one night than he and his family could eat in a fortnight. However, after one of these big hauls he is always thrifty enough to bury as much as he can of it for future use.

It is really wonderful how the Fox holds his own as he does, considering the many enemies he makes for himself by his raids on the poultry yard and game preserve. I have known many neatly laid plans for his destruction, but it is seldom he can be brought to book, owing to his keen sense of smell, observation, and wary ways. Of course he may be poisoned, and unfortunately often is by those selfish enough to think of nobody else's interests and pleasures but their own. To lay down poison is, besides being illegal, one of the most cowardly actions imaginable, suspicion and punishment often resting on the wrong person as a result.

A poisoned Fox will often die some distance from where the poison was picked up, and perhaps on another's land. To trap in hopes of having revenge for some paltry loss of Poultry or

Pheasants, which most hunts are willing to compensate for, is bad enough, but in this case Reynard has a hundred to one chance, for it is rarely that he is going to be caught by the ordinary methods of vermin trapping.

A keeper well known to me has been trapping vermin and Rabbits for over thirty years in many parts of the country where Foxes have been plentiful, and he tells me that he has never had the misfortune to catch a Fox. His vermin traps have been baited, too, with all kinds of birds and other animals, many of which are considered delicacies by Reynard. He never allows such traps to remain too long set in one place, and renews the bait often enough, hence the secret of trapping where Foxes are preserved. If not impossible to catch a Fox in a freshly baited trap, it is very improbable. Rabbit traps left unattended for weeks are liable to do harm in this way. Run traps may catch cubs if set anywhere near the earth.

A friend of mine once caught a cub in a drain pipe where he always kept a trap set for Stoats. The little chap got his pad rather badly crushed, but after a few dressings he soon got well. Through being constantly handled he also became tame to a certain extent, but never wholly so. He became a great pet and was kept tied up to a small box kennel in the corner of a yard. When

he was about a year old he took to killing poultry, and got so bad at this that it was sudden death to any fowl that went within reach of his chain! One day some one on the estate was passing through the yard when his Terrier (who was very keen on Cats) hustled one of the farm Cats near Reynard's kennel. It proved too near, for he sprang out, seizing her across the shoulders and killing her instantly. My friend told me he had lost five or six Cats in the same way, and I have heard since that this Fox got so bad at this kind of thing that his kennel has had to be enclosed with wire. Although he was well and regularly fed his love of slaughter seemed as if it could not be resisted when the opportunity came.

Tame, or so-called tame, Foxes are by no means rare. There is always a demand for them in most of the Midland hunts, not only for litters of cubs, to turn down in the Summer for the Winter's hunting, but also for old Foxes to release late in the hunting season, where the supply has become exhausted through too many being killed by hounds, or more likely still, where some shooting man, who has kept his coverts closed to hounds until the end of the shooting season, and who never keeps a good wild Fox if he can help it, through fear of losing some of his game, does not like to have the reputation of being drawn blank when his coverts are open to hounds.

Such a Fox as he turns down has probably been shut up ever since it was a small cub and not released until hounds are perhaps in the neighbourhood. Should an animal like this be lucky enough to escape being killed by hounds his future is not likely to be a very happy one, for he will be anything but favourably situated. In the first place, he has never had the chance of learning the ways and means of getting his own living, and, secondly, he is thrown on his own resources at a time of year when the food supply is at its lowest. Consequently, he is driven by hunger to pick up all sorts of filth, and there is no wonder, under such circumstances, that we hear so much of *mangy Foxes* in these days. Litters of cubs turned down in the Summer, nevertheless, and artificially fed, are also sources of *mange*.

III. DEER

I propose to deal in this essay with Red and Fallow Deer, the two most common and best known species in Great Britain.

Although there are over three hundred parks in England that contain Deer, besides a few spots where they are still found in a wild state, it is surprising how little information there is to be found in the many books of natural history and sport concerning their habits. In only about eighty of

these parks Red Deer are kept, the two species living quite peacefully together.

Fallow Deer are the most common in England, therefore we will deal with that species first.

Some writers tell us these animals were brought to England by the Romans, but this may be because we have no mention of them at an earlier period. It has been repeatedly stated that the dark variety of Fallow Deer was brought from Norway by James I. to improve those already in our parks, but Mr. Harting has shown clearly that this variety existed in English parks long before James's day! Equally erroneous is the statement that the spotted variety, known formerly as Menil, was brought from Manilla.

Outside park fences Fallow Deer have been found in a wild state in the New Forest, Epping Forest, Rockingham Forest, and one or two other places, where a few still exist.

The food of Fallow Deer consists chiefly of grass, acorns, Beechmast, chestnuts, berries of the White Thorn, young tender shoots of Beech, Hazel, Ash, bark, roots, and corn of all kinds, in fact little comes amiss to them in the vegetable world. They will even chew up shed horns and bones! I have often seen them eating scraps of cooked meat and other refuse that has been thrown away after clearing out ashpits, and have also known clothes that have been hung out to dry to be eaten by them!

Fallow Deer shed their coats in the early Spring. If they have had good Winter feeding and the weather comes mild they begin to disrobe about the middle of March and get their new coats complete about the end of April. The greater part of the old coat is pulled out by the Deer themselves and may be seen on the ground in mouthfuls. Jackdaws use the hair for lining their nests, and are often seen on a Deer's back helping themselves!

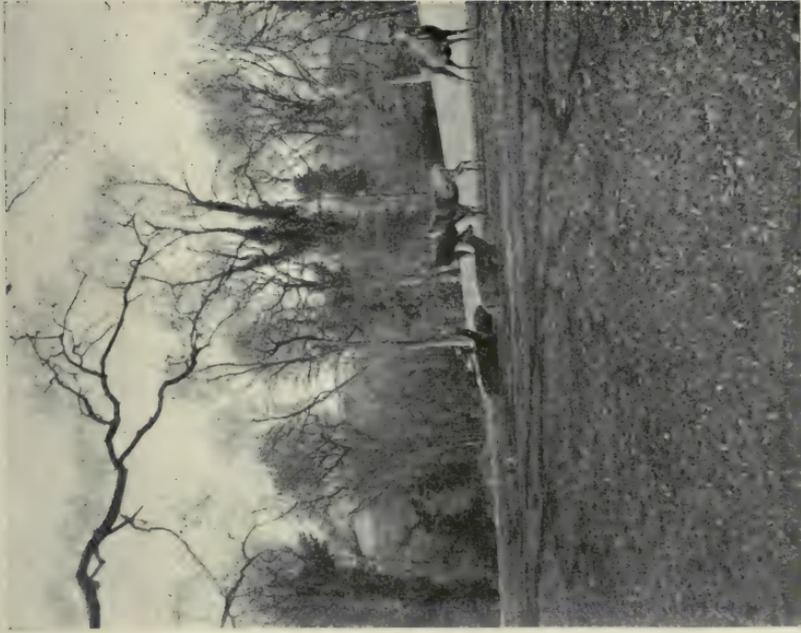
A change of coat means a change of colour too. The dark variety of Deer becomes much darker in the Summer, and the lighter coloured ones become paler. Just before the last of the old coat is off they shed their horns, the older bucks being the first to lose their horns, and the younger ones, according to age, a little later.

The shedding of old horns is caused through the new growth pushing the old ones off, exactly in the same way as the teeth of an infant have to make room for permanent ones. The whole of the new growth takes place in about fifteen weeks. After the horns have done growing they begin to harden and the blood-vessels dry up, and the velvet is peeled off by being rubbed against trees, fences, or other hard material. As soon as the horns are free from velvet a change of disposition takes place with the bucks, for instead of herding peacefully together as they have done since

shedding the old horns, they become quarrelsome, and by the middle of September their necks increase in size and strength, a provision Nature has made fitting them for the fierce fights about to take place with their fellows for the ownership and mating with the does.

It is the finest and fittest bucks that take possession of the does; one buck will often take all the does in a small park and keep other bucks at a distance for a time; however, as the rutting season advances and his strength decreases, another will probably soon take his place. So fierce are the fights at this time that it is not unusual for bucks to get killed by being gored to death, and when one gets badly disabled he is sure to be killed by others perhaps not in the first quarrel. I have frequently known a buck that has been killed in this way to have his lungs pierced through, although it is seldom that the tough hide is punctured, only pushed through the vital parts by the points of his adversary's horns. As the rutting season advances the fine condition so rapidly gained is as quickly lost, and by the end of October the Deer are in their Winter coats, presenting quite a different appearance to what they did six weeks previous!

The period of gestation with Fallow Deer is about eight months, when one is born at a birth. Although some naturalists tell us that two and



Red Deer.

three are sometimes born, this may have happened, but my friends, who have had long experience with Deer, have never seen it, although some of them have had charge of Deer for twenty-five years and been killing from twenty to seventy does each year. The does are killed usually about two months after the rutting is over, therefore there is always an opportunity of knowing if a doe was likely to become the mother of more than one fawn. The father and grandfather of Mr. Bamford, too, had charge of a big herd for nearly one hundred years, and never knew more than one at a birth. I have spoken to many old park-keepers on this interesting subject, but never could find one who could tell me he had actually seen it, although one or two keepers of considerable experience have told me they believed it had happened. This may have been because they saw two fawns sucking one doe, an unusual occurrence, but still I have seen this and each time was able to find out that they were the fawns of two does.

Fawns are born about the first and second weeks of June. I have known of one as early as May 25, and one as late as October 20, but both these dates may be taken as extremes. They are on their feet and quite active a few hours after birth. When a doe is about to give birth to a fawn she leaves the herd and selects a quiet spot,

where she leaves her fawn for some hours before returning to feed it. This takes place in the evening. The next morning the fawn will probably be found some distance from where it was seen the previous evening.

The first fortnight of its life is spent in sleep during the day and feeding and play at night. When about fourteen days old it follows the mother and is seldom seen from her side mixing with the herd. If the weather is warm when fawns are born, in about three days afterwards they are strong enough to make their escape from most enemies, unless it is a very fast dog. Showing the strength and activity of fawns even at birth, I once knew of a doe which gave birth to a fawn. A friend of mine rode up to it for the purpose of earmarking (a custom for keeping up the stock) when up it got and went over the sea cliff, swimming out to sea about two hundred yards and returning to the same spot! He marked it and carried it into the park none the worse for its adventure. Seven years afterwards he killed it, and it was then a fat buck weighing 140 lbs. clear.

Some does have their first fawn at two years old, while others do not breed until the third year. They usually breed until about fourteen years of age, and may live a few years longer. Bucks are not so long-lived as does, for nine years is a good

age for the former, although much depends on the park. On a rich pasture Deer do not live so long as on poorer land. A buck is at his best when seven years of age; after this his horns deteriorate each year, and if left the chances are that he will get killed by stronger animals during the rutting season or die in the Winter through being unable to get sufficient food for an already weak body. A buck increases the growth of his horns each year until he is six or seven years of age.

Deer vary in different parks both in size of body and horn growth. In some parks I have known some remarkably heavy animals with very poor heads, and in others good heads on very small bodies. This variation is due to the soil, although no doubt in-breeding has often something to do with poor heads. In-breeding always shows more in the horn than body. Mr. Bamford tells me that he has recently been killing deer in two parks situated only about two miles apart; the soil in both is rich and about the same; in one frequent changes of blood have been made from time to time, and here the heads are very fine, while in the other no change has been made in the memory of man, yet the bodies are exceptionally good but the heads very poor indeed. In both these parks bucks have been killed weighing 150 lbs. clear. This is very heavy, considering that in many parks the bucks do not average more than 90 lbs.

The habits of Deer vary according to season and food supply. In parks where there is plenty of keep during the Summer they spend most of the day resting. From May till the end of September they rest from 9 a.m. until 2 p.m. in the shade when the sun is hot. During the period of rest they occasionally get up to stretch themselves; after licking or scratching their sides with hoof and horn they lie down again, *but always on the other side.*

They pass their time in brushing flies off, chewing their cud, and sleeping. About 2 p.m. they feed and wander about until 4 p.m., when they again lie down until about 7 p.m. Starting again, they feed until 10 p.m., resting probably until 5 a.m. In the Winter, when they have to work harder for food, they take their rest at midday and night, three hours at a time, but much, of course, depends on food supply.

Snow and frost have no bad effect on Deer if plenty of good food is put down for them; the best is good hay and beans, although they are particularly fond of maize, locust beans, and oil-cake.

During the Winter the bucks are in the lowest condition and the does at their best, especially those that may have lost their fawns in the Summer. Does suckle their fawns up to within a month of the next birth, and when a doe has lost her fawn in the Summer I have often known the

fawn of the previous year to suckle on through the following Winter.

There are several ways of catching Deer. In some parks they are ridden down, but this is the worst plan I know of, for if a Deer gets thoroughly blown, as he must do by this means, he more often than not dies after being secured, especially if his legs are strapped. Another way Deer may be caught is by Deerhounds trained for the purpose and run by sight. This answers very well for old bucks that have to be caught for stall feeding and are not strong enough to run too great a distance, but for younger and stronger animals it is not a good plan. Undoubtedly the best, most humane, and safest way of catching Deer is by netting them. This is done with long lengths of rope-netting made for the purpose and set in enclosures or other places where the Deer can be driven, and escape made impossible without going into the nets. Deer caught in nets naturally struggle very violently to get free, but if too many are not driven in at one time, and they are secured at once, little or no damage is likely to be done.

It is surprising what fences Deer will get over when cornered. Anything under six feet is of little use, and I once knew a buck get over a fence nine feet high. This he did by jumping sufficiently high enough to get his forelegs over the top, then throwing his body over. It is very rare to see a

Deer jump clear over any obstacle that is more than five feet six inches high, for the animal nearly always settles on the top and clambers over.

Fallow bucks, although quite harmless when at large, are by no means so when brought in close quarters with man or dog, for a buck will savagely use his horns in self-defence to the bitter end. I have known many who have received ugly wounds when catching bucks. Deerhounds are often stabbed through by a buck at bay. Few people who have never handled a live Deer have any idea of the great strength they possess for their size.

Deer suffer from diseases of various kinds, but much less so than domestic animals, and even less than most of our wild animals. On heavy land Fallow Deer often suffer from liver fluke; this is a very troublesome disease and one that frequently ends fatally. For cure many park keepers have great faith in strewing Scotch and Spruce Fir boughs about for the Deer to eat the bark, which contains turpentine and is said to kill the fluke, but unless the weather comes severe the Deer will not eat enough Fir bark to do much good, so that the remedy is not to be depended upon. Rock salt is, no doubt, a fine tonic for Deer.

Footrot is another disease from which Deer suffer in some parks; in others it is unknown. Where Sheep are suffering from the disease the

Deer often get it, more especially the older bucks. Does, curious to relate, rarely get it! The bucks suffer most, owing to being more liable to get the points of their hoofs broken through fighting and other causes, leaving the foot exposed to take the disease. I am of the opinion that the disease only attacks after the hoof has been broken. It usually comes on after the rutting season and gets better the following Spring.

Red Deer are very similar to Fallow Deer, both in structure, habits, and food, and probably as numerous now in England and Scotland as at any period. The late W. Shirley tells us that in 1867 Red Deer were then kept in thirty-one deer parks in England; now they may be found in at least eighty-six.

The Scotch forests, too, are now more heavily stocked than formerly, owing to the demand for stalking.

There are still a few Red Deer in England that may be said to be wild or that are not enclosed by fences. In the New Forest, as well as in Devon, Somerset, and Westmoreland a few are found.

The period of gestation is about a fortnight longer than that of the Fallow Deer. The calves are born about the middle of May and early in June. The hind isolates herself from the herd and has her calf, leaving it much in the same way a doe will do, although she never gets too far away.

Should any person or stray dog turn up she is always ready to fight in its defence, and this she is very capable of doing by getting up on her hind legs and striking with her fore feet. I have on several occasions seen a hind kill dogs in this way, and a friend of mine was once severely punished by a hind's fore feet when attempting to earmark a calf. The calves are born spotted and remain so until the coat changes in the Autumn.

Red Deer when in anger have a way of giving warning by grinding their teeth, which can be plainly heard for some distance.

The shifting of coat, shedding of horns, rutting and breeding seasons are each similar to that in the Fallow Deer only all a little earlier.

The first growth of horn starts in the Spring, when the calf is about or a little more than a year old. One single spike from twelve to eighteen inches is grown the first year, and this increases in size and points each year until the stag is eight years old.

The life of a Red Deer is longer than that of a Fallow Deer. A stag is at his best from eight to twelve years of age, for after twelve years he deteriorates in horn and body. Hinds live much longer, and I have known several well over twenty years of age, and have heard of some over thirty.

The weight of Red Deer, like Fallow Deer, varies according to richness of pasture. A good average



Rabbits.



Noctule Bats.

for English deer parks is twenty stones for stags and fourteen for hinds. In the Highlands of Scotland the Deer do not often get so heavy.

Much has been said of late years about the deterioration of heads in the Highlands. No doubt the chief cause of this is overstocking on poor soil and killing the best stags without due respect to future stock. Owners of Scotch forests have introduced stags from English parks, nearly always selecting Deer from parks where the heads are exceptionally fine in hopes of breeding animals with fine heads; but this is usually disappointing, for big heads are produced on good land, and to take Deer from a rich feeding park to a poverty-stricken Scotch forest is sure to fail in the desired result unless artificial feeding is resorted to, and even this is not often a success. Change of blood is a step in the right direction, but to get the greatest success Deer must be brought from poor land to better. Good Winter feeding is, no doubt, an aid to the production of fine heads, but the soil has most to do with it.

Strange to say the span of life with Deer of both species on poor land is longer than on rich soil.

In some parks there may be seen a white or cream-coloured variety of Red Deer. They are quite as heavy and carry as fine heads as those of normal colour. Whence this variety was derived is uncertain; some say they are German and

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others call them Danish. They are not so common as the white variety of Fallow Deer, in fact I never knew a white Red Deer from other than white parents or one of that colour. Such is not the case with Fallow Deer, for it sometimes happens that a white fawn is born of parents of the dark variety. The white variety of Fallow Deer as fawns are a cream colour, but afterwards become white.

¶ The largest parks in England are Savernake 4000 acres, Windsor 3000, Knowsley 2600, Gredge 2500; this latter is the oldest Deer park in England and the only one mentioned in Doomsday Book as containing Deer then as now; Duncombe 2240 acres, Buckhurst 2100, and Thoresby 2000 acres.

Deer parks were formed after the Norman Conquest and increased until Cromwell's time, when they were probably more numerous than now. During the Civil War many of the park fences were broken down and the Deer driven out or killed. Many Deer parks date no farther back than Charles II.'s time, when owners settled down again to restore the mischief caused by the war.

IV. THE RABBIT

The Rabbit is one of the most common animals we have, for it is a question if there is one square mile of land outside our big towns on which it is

not to be found. It is exceedingly prolific, to such an extent that in many districts it defies the efforts of man to exterminate it. One naturalist tells us that the offspring from one old pair of wild Rabbits, if left to breed free from enemies of all kinds, would be the means of producing a million in one year; this is, perhaps, an exaggeration, but no doubt they do multiply to an alarming extent.

No animal has more enemies than the Rabbit, especially during the early part of its life; in fact, it is very doubtful if more than five per cent. of the young Rabbits born ever come to maturity. This heavy death-rate among the infants is not all due to slaughter by natural enemies, but is often brought about by spells of bad weather. During the early months of the year Rabbits are most prolific, and should snow and severe frost come, as is often the case, nearly all the young die from lack of food. Long periods of wet, too, are even more fatal, especially on heavy land. We have very clear proof of what havoc snow and frost will do, for by taking the year of 1908 we had fewer Rabbits in the country than for many years past, owing to the snow and severe frost during the memorable April of the year mentioned.

Rabbits breed when from four to six months old. Those born during the early part of the year breed earlier than the late ones. The period of gestation

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is about thirty-four days, and the most usual number is five at a birth. I have known as few as two and as many as ten.

They are born blind and remain so for about a week; at fourteen days old they are able to run, but not capable of maintaining themselves before about a month old.

Rabbits live and breed in colonies, but the doe, when about to become a mother, prefers to make a small chamber some distance away from the colony to which she belongs, and where she can lay up her family in quietude. She spends very little time with them beyond that necessary for nursing. Her nest is made of rough grass and other similar material, which she lines with fur plucked from her own body. While her family is small and when in these isolated chambers, she takes the precaution to block up the entrance with soil before leaving, no doubt with a view of preventing raids from the Stoat and Weasel, perhaps two of her most deadly enemies; but it is from these shallow breeding places that the Fox and Badger get so many meals by scratching through into the nest.

Young Rabbits are to be found most years at Christmas-time, and the breeding continues up to the following August, so that the breeding season may be said to extend over nine months of the year.

During the early months of the year Rabbits are found (where not in colonies) in pairs, but in spite of this I always look on them more as polygamous animals. Fierce fights take place between the bucks, and should a stranger enter a colony he gets a rough time of it. The means of punishing each other is by biting and kicking, as may often be seen by the quantity of fur lying about where the battle has taken place. I have known, too, bit and torn ears the result of fighting.

The food consists of nearly all the vegetable produce of a farm, such as grass, seeds, clover, roots, and young sprouting corn. Much damage is often done during severe weather by Rabbits gnawing the bark of underwood, and where kept in large numbers serious injury is done to big timber. Considering the damage they do it is a wonder they are so numerous, but this may be attributed to the sporting shot they give and their value as an article of food.

The various means of capture are mostly well known; perhaps the most effective is trapping when exterminating the animals altogether is the object in view. Much has been said of late years about the use of the steel trap by people who know perhaps least about the matter, and who so far have failed to find any substitute as effective and capable of inflicting less punishment. In the capture or destruction of most wild animals it

would be idle to suppose it can be done without causing pain no matter what means are employed. After many years of Rabbit killing reliable keepers tell me that they consider there is less suffering caused through trapping than by some other means, if properly carried out. It is to the interests of any one engaged in trapping Rabbits to look at his traps once or twice during the night and remove any animals caught, so that they are not left long to suffer. Sometimes it is true a Rabbit will break away with a broken limb, but when this happens it must not be imagined that the suffering is so great as some people would lead us to believe. Opportunities of proving this have been forthcoming, when animals that had been previously caught and left a leg behind, and sometimes two, were again captured, perhaps before the old stumps had had time to heal, but in nearly every instance the condition was found to be of the best, clearly showing that had there been great suffering this would not have been so.

Ferretting is another means of capture as much employed as trapping, but it is curious that we rarely, if ever, hear of cruelty through the use of Ferrets. However, I am quite convinced that much more suffering is incurred by the use of Ferrets, for the latter, if turned into big burrows, are, even if muzzled, capable of inflicting severe punishment on Rabbits that refuse to bolt by

scratching their bodies raw, and if able to get at the Rabbit's head gnaw or scratch its eyes out. More often than not these poor brutes are left to die a lingering death. I have frequently heard of Rabbits that have been worried by Ferrets having emaciated bodies, this being evidence of the suffering they must have gone through.

Strange to say, Rabbits that have been mauled by a Ferret seldom recover, although injuries from traps rarely prove fatal.

The Rabbit is an easy animal to trap compared with most wild animals, but still in many respects he has a good idea of taking care of himself. When bolted by Ferrets the way in which he will take advantage of every bush, tree, or other cover, by placing it between himself and the gun until well out of range, has often struck me as being very smart. I have repeatedly heard of Rabbits being bolted when, perhaps, there was no other cover but one small tree, the stem or trunk of which he would get behind and take such a line that he could not be seen by the would-be shooter until well out of shot. I have known of hundreds of lives being saved in this way.

On the approach of man or other enemies Bunny's danger signal is thumping the ground with his hind legs, which puts his less watchful companions on the alert.

As already stated, his most dreaded natural

enemies are the Stoat and Weasel; the former is the most deadly owing to being strongest and fastest. The Rabbit a Stoat selects is nearly always a young one, if an adult, or one of the last season's breeding. Why this is so is difficult to discover, unless it is that a young one is more easily caught than older and more experienced animals. I have many times heard of a Stoat hunting a Rabbit by scent much in the same way a hound would do, but the hunt is not often a long one, for the Rabbit seems to get so terrified that it appears unable to move and lies helplessly down to await his fate. I have sometimes come across a Rabbit that has been hunted by a Stoat and, although not injured in any way, it has been too frightened to move and allowed me to pick it up.

During the breeding season the Stoat confines its attacks to the very young Rabbits. I have at this time of the year often seen the old doe boldly come to the rescue of one of her youngsters and beat off a Stoat by savage kicks, showing what a devoted mother she is.





Young Kittiwake Gulls.

CHAPTER IX

BIRDS; AND HOW TO OBSERVE THEM

I. HOW TO OBSERVE BIRDS

MANY people who attempt to observe birds go about it in a very curious way, and I have often been highly amused at the reports which have been given to me of the poor results that have sometimes followed the efforts of some of my friends. Two very essential rules must be observed if the young naturalist is desirous of successfully stalking birds, and these are, absolute quietness must be observed, and an infinite amount of patience must be displayed.

I have had people with me on some of my bird-watching expeditions who made enough noise and commotion to frighten every bird we came across into the next county, and then they wondered, when the ramble was over, how it was our list totalled so many different species, most of which the noisy members of the party had neither seen nor heard!

Personally I have always found that the best way to achieve success in bird-watching and stalking is to go alone, armed with a reliable field-

glass; but if a companion is needed, let that companion be one of similar tastes to yourself, and do not increase the party! If more than two persons set off to observe birds there is likely to be more talking and commotion than if two kindred spirits join company.

Wander along quietly, your field-glass focussed ready for action at any moment, and look and listen at every likely spot for some feathered inhabitant of the part of the country you are visiting. It is astonishing how birds can be seen to advantage when one remains quiet, and I have many times during my wanderings had a peep at shy Warblers, Woodpeckers, Nuthatches, Moorhens, Coots, Little Grebes, Crows, and other kinds too numerous to mention, which would not have been possible unless great patience and absolute quietude had been displayed.

You must call perseverance to your aid, too, if you would observe birds successfully, and also carry out operations throughout the whole of the year. Do not restrict your observations to the Summer when the trees are laden with their finest dresses, for at such time it is a most difficult matter to get a sight of some of the smaller birds that do not come out into the open. During the Winter, when the trees and bushes are leafless, then is a splendid time to observe birds to advantage. This is especially the case when there has

been a hard frost or snow overnight and the land is under the rule of King Frost. At such season many kinds of birds that are shy and timorous become much more tame and confiding, but it should be borne in mind that birds do not suffer as much from the cold as from hunger.

In the Winter, too, it is a capital idea for those who have gardens to feed the feathered tribe, for by this means many interesting observations may be made of the movements of some kinds of birds which is not possible under any other circumstances. Beyond this, of course, you will, by feeding the birds in hard weather, be performing a kind action of which they will not be slow to take advantage, and you will be amply compensated by the manœuvres they adopt to procure the food put out for them, and their bright and cheery presence will also add largely to the pleasure of watching them close at home.

Writing of the birds that visit gardens reminds me that my own garden has been the playground for several kinds of feathered favourites, and not long since I was much amused watching some Rooks who paid us a visit, much to the astonishment of the household Cat. It was very entertaining to notice the Rooks scolding the Cat, who stalked them almost within springing distance; and not long since a troop of Jays came to see us. I suspect, however, these artful woodland rovers

were tempted into the garden because of some peas which offered the birds a welcome change from their usual bill of fare; and not long after watching these interesting visitors a Spotted Flycatcher took up its station on an old post and started fly-catching.

The Cuckoo often flies over in the season of the year and calls cheerily as he flies, and many other bird friends come into the garden I love, and about these I must give a fuller account at some future time.

I was, however, so intensely interested on one occasion watching a male Redbreast feeding his devoted little mate as she sat contentedly upon her well-built nest, placed on a shelf in my summer house, that I feel I must devote attention to this particular pair of Robins, although my notebook is crowded with reminders of many other items in Nature's triumphal march. I should state that the Robins have been for many years past regular visitors to my garden during the Autumn, staying all through the Winter and until the first green flush of Spring. Indeed, one of the surest signs of the approach of Autumn is the return of our Robins and the utterance of the cheerful lyrics of the male bird. Regularly each Autumn a pair of Robins have made their appearance, and quite as regularly they have taken their departure for some favourite hedge-bank at Springtime. We always

feed the birds during the hard weather, and many species visit us daily in search of food. As regular as clockwork, the Blue and Great Tits visit the cocoa-nut husks suspended by copper wire and filled with tasty and fattening suet. Very regular, too, have the chattering Starlings been during the past Winter, whilst occasionally a speckled Thrush and a sooty Blackbird, a sprightly Chaffinch and elegant little Hedge Sparrow, have joined the feathered throng. The House Sparrows, like the poor, are with us practically all the year round.

It may be, then, that our having befriended the birds during the hard weather has resulted in us being amply compensated for our trouble by this particular pair of Robins locating the summer house during the Winter and thinking it a suitable position in which to rear their spotted chicks. I had flushed the Robins from the precincts of the summer house during the Winter on more than one occasion; therefore, I was not greatly surprised to find their substantial nest as early as March 10. Owing to the situation chosen, it was necessary that the structure should be substantially built, and a cleverly constructed foundation was laid of coarse grass, straw, leaves, and other garden rubbish. At a casual glance, the cup-like interior was hardly discernible, the brim of the nest was so high, but on a closer inspection the deep recess for the reception of the freckled eggs

was revealed. Being very early in the year, the Robins were evidently in no great hurry to put the finishing touches to their homestead, but by March 21 a little horsehair had been added as a lining, and the first egg was laid on that date. One egg was added each day until the full clutch of five were safely deposited, which brings us up to March 25. It is my opinion—as a result of careful observation—that the eggs were laid early in the morning.

Since March 25, until April 8, the female sat tight upon her precious eggs with little respite, and as I write I am hourly expecting the young Robins to make their exit from the shells. The birds have by now become most lovingly tame and confiding, and I never remember watching with so much interest the evolution of the contents of this particular bird's nest and its industrious little owners. Many, many times I have watched and listened to the cock bird singing a cheery song to his brooding mate upon the nest, and to-day I caught him in the act of feeding her with as fine and fat a caterpillar as mortal eye could wish to see or bird to feast upon. A heavy April snow-storm had covered the ground early this morning, and where the male bird had unearthed this tasty tit-bit is to me a mystery. Poor little fellow, when I first saw him approaching the nest he was wet and bedraggled in appearance owing to rain

succeeding the snow. It was some time before he could summon up courage to reach his mate in the presence of a third party, but at last he did so. All this time the fat grub was hanging catkin-like from the bird's beak, and I noticed with interest that this did not debar him from uttering a few notes to his partner upon the nest, to let her know that he was near at hand. He advanced cautiously, first hopping upon a pail, then a little higher on to a box, then up on to a hoe hanging in the summer house, and finally reaching the shelf and delivering up the tasty morsel to his trustful little mate sitting complacently upon the nest. She—brave little bird—became most docile and tame, refusing to move off the nest even when I was only a few inches away from her. Her lustrous eyes and cherry-red throat could just be discerned in the deep nest.

The young Robins hatched out on April 9, thus showing that the eggs took fifteen days to incubate.

This incident clearly shows what may be accomplished by encouraging birds and affording them protection, and only those who have experienced the intense pleasure it affords to watch the habits of even common birds close at home can realise what an entertaining field of study is open to them if they have eyes to see and ears to hear.

A very enjoyable time may be spent by the young observer of birds if he goes to work quietly,

and at no season of the year is Nature stalking more exciting than when nest building is in full swing. Here again, however, absolute quietude is essential, as many of the shy Warblers and other birds have a habit of slipping very noiselessly off their nests. This is especially noticeable in the case of the Greater Whitethroat, and unless one is very quick it is most likely the dumpy little creature will slip off her frail nest secreted in some Bramble bush or Stinging Nettle quite unobserved.

If two boys go a-nesting, that is, of course, to find nests, note down where built, what they are composed of, the number and colour of the eggs, any interesting features, and, of course, the name of the owner. It is a good plan when stalking along a hedgerow for one boy to walk on one side of the hedge and the other to walk on the opposite side. By this means a good deal of unnecessary climbing and scratching will be avoided, as each boy is able to peep into the nest which is on his side of the hedgerow.

I have found, too, that when the trees and bushes are covered with leaves it is a good idea to carry a stick and tap the herbage as you go along. There is no need to go about it as if you had a scythe or sickle with which to mow down everything within reach, for just a gentle tapping will be sufficient to flush most birds you are in search of. Be on the alert for any bird to fly out, mark

down exactly the spot where you first caught sight of her, then search for the nest. Be careful not to leave any tracks behind, for I am taking it for granted that it will be your desire to protect the bird whose nest you discover and not to molest or rob it in any way.

Having discovered a number of nests early in the year, periodical visits should be paid to them, so as to discover how long the owners took to build their homesteads; when and how many eggs were laid; how long the eggs took to hatch; how long the young remained in the nest; what they were fed upon and the changes they passed through in size and plumage. Many interesting notes may thus be made, and the parent birds will themselves become tame and confiding, and you will be able to see them at comparatively close quarters and make observations concerning them which is not possible at any other time.

The great point to recognise in bird stalking and bird watching is to let the feathered population realise that no harm is meted out to them, and when you learn to become on intimate terms of acquaintance I have no fear whatever of the result, for you will find bird stalking so interesting and entertaining that you will wonder, as you grow older, how it was that you ever permitted yourself to disturb birds and rob them of their treasures.

There are two little birds very much alike that

I hope you will make fast friends with during your country wanderings, and a few notes concerning these two feathered favourites of mine may be of interest.

I refer to the Chiff Chaff and the Willow Wren. The bird books state that these two visitors from over the seas reach us "some time during March." Personally, I find March 20 is about the date one may visit the neighbourhood of a wood, or coppice, in the expectation of hearing or seeing these two little feathered harbingers of Summer. Both birds haunt the tops of tall trees, but build their nests upon the ground. The nests are very much alike, being oval in shape with a hole in front. The structure is built of dead grasses and similar materials, and the inside is snugly lined with a profusion of feathers. The Chiff Chaff lays six eggs, and the Willow Wren from five to seven. The egg of the first named is more rounded and larger than that of the latter, and the red spots are darker and not suffused.

On seeing the two birds, even only a little distance away, it is difficult to distinguish one from the other. The general colour is brown, yellow, and greenish, but the Willow Wren has a yellower breast, and is brighter in its plumage as a rule. I have often been puzzled as to these two birds, and remember how, as a boy, I used to watch them so as to train my eye correctly. For several years I



Nest and Eggs of Red-backed Shrike.



Nest and Eggs of Bullfinch.

studied both birds closely; and although I have now been bird watching for nearly thirty years, I am looking forward as keenly as ever to making close friendship with my little visitors again. When once birds are studied intelligently one's enthusiasm deepens, for in penetrating into Nature's secrets it cannot escape attention that the more one learns the more there is to learn. And now I will let you into a secret I have discovered respecting the Chiff Chaff and the Willow Wren. When you see the birds be sure to look closely at the legs, for by this means identification is certain. The legs of the Willow Wren are bright reddish brown. Those of the Chiff Chaff are black. The breast of the latter bird is light grey or stone colour, but very often the difference in colour generally is very slight, and the method of identification which I have referred to is a good one.

In the nature of their voices the two birds are quite distinct. Whilst the Chiff Chaff sings "Chiv-chav, chiv-chav," and also calls "Chadic, chadic, chadic," when searching for food, and cannot be called a songster, the Willow Wren is a delightful little singer. He has been called the piccolo soloist in the orchestra of bird music, and the title is well applied and fully deserved. It is a plaintive but beautifully sweet and inspiring warble, and to listen to a number of Willow Wrens singing in chorus in the early Spring is one of the most

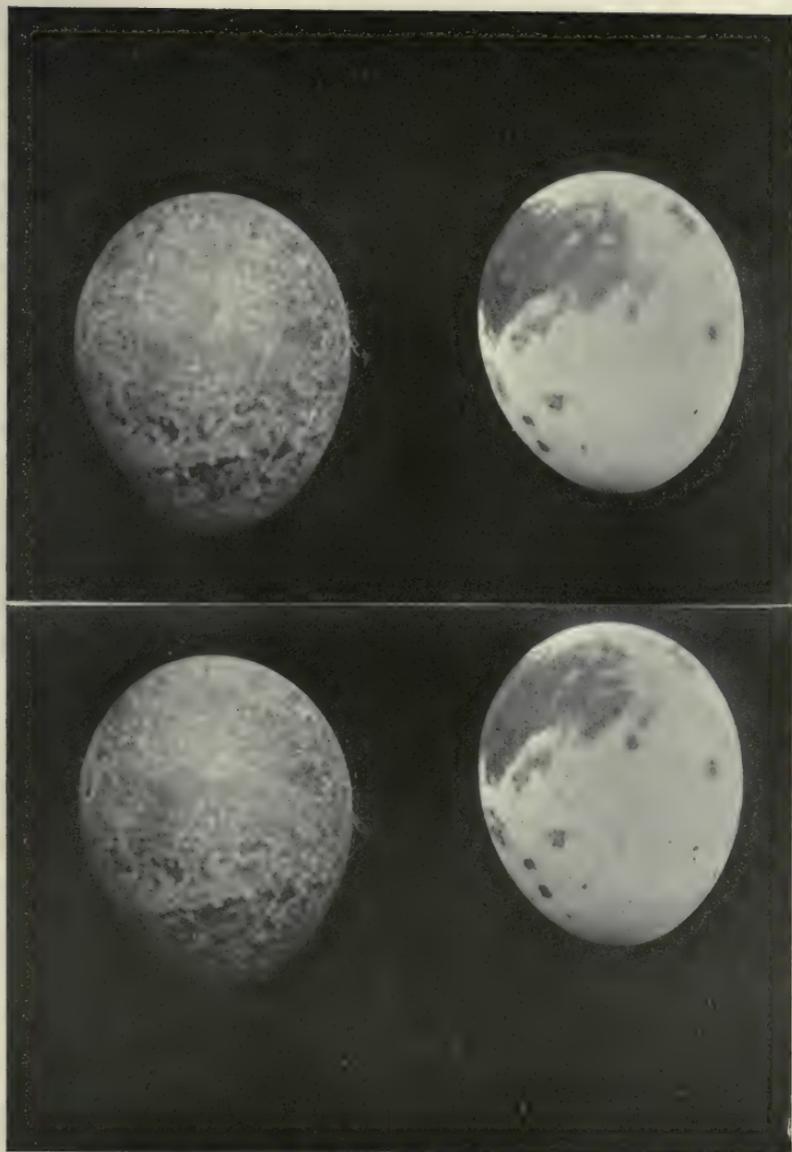
enjoyable experiences in Birdland with which I am acquainted.

As you get to know the eggs of some of our commoner British birds you will be amazed how they vary in size, shape, colour, and markings. It is interesting to compare some of these, and illustrations of a few are given in this book, as well as a stereoscopic photograph of the eggs of the Kestrel and the Sparrow Hawk. Birds' eggs, thus looked at, have a beautiful effect, and I offer the following suggestions of further comparisons that might be made with both pleasure and profit:—

1. GOLDFINCH AND BULLFINCH
to show difference in size.
2. WHEATEAR AND STONECHAT
to show difference in size.
3. CHAFFINCH AND GREENFINCH
to show difference in size.
4. A SERIES OF TREE PIPITS
to show difference in markings, etc.
5. REED BUNTING AND YELLOW BUNTING
to show difference in markings.
6. SPOTTED FLYCATCHER AND ROBIN
to show similarity of some varieties.
7. SWALLOW, HOUSE MARTIN, AND SAND MARTIN
to show difference in colour, markings, size, and shape.
8. WRYNECK AND LESSER SPOTTED WOODPECKER
to show similarity.
9. PIED WAGTAIL AND HOUSE SPARROW
to show similarity of some varieties.

10. TURTLE DOVE AND KINGFISHER
to show similarity in size, but difference in texture.
11. NIGHTJAR
to show beautiful mottling.
12. STARLING AND SONG THRUSH
to show difference in colour and markings.
13. JAY AND JACKDAW
to show difference in size, colour, and markings.
14. RINGED PLOVER, SANDPIPER, AND DUNLIN
to show similarity.
15. COMMON TERN AND COMMON SNIPE
to show similarity in marking but difference in shape.
16. PHEASANT AND PARTRIDGE
to show difference in size.
17. KESTREL AND MERLIN
to show similarity in size and markings.
18. KESTREL AND HOBBY FALCON
to show similarity in size but difference in marking.
19. RED GROUSE AND BLACK GROUSE
to show difference.
20. COOT AND MOORHEN
to show difference in size and markings.
21. STORMY PETREL AND FULMAR PETREL
to show difference in size.
22. LITTLE GREBE AND GREAT CRESTED GREBE
to show difference in size.
23. LAPWING AND GOLDEN PLOVER
to show difference in size and markings.
24. FIELDFARE AND BLACKBIRD
to show similarity in shape and colour.
25. WHIMBREL AND CURLEW
to show similarity in size, shape, and colour.
26. RAZORBILL AND GUILLEMOT
to show difference in markings.
27. SHAG AND CORMORANT
to show similarity in size, shape, and colour.

28. TWO GUILLEMOTS
to show as great a difference in marking as possible.
29. GUILLEMOT AND GREAT AUK
to show similarity in shape and marking, but difference in size.
30. NIGHTINGALE AND KINGFISHER
to show a very dark egg and a very light one.
31. SPARROW HAWK AND CUCKOO
to show difference in size and shape.
32. LAPWING AND RING DOVE
to show a tapered egg and a roundish egg.
33. CUCKOO AND SKYLARK
to show similarity in shape, size, and marking.
34. CUCKOO AND HEDGE SPARROW
to show dissimilarity of shape and marking.
35. CUCKOO AND MEADOW PIPIT
to show similarity of colour, shape, and size.
36. CROW AND ROOK
to show similarity.
37. JACKDAW AND MAGPIE
to show difference in size and markings.
38. ALL THE TITS
39. BARN OWL AND TAWNY OWL
to show difference in shape, namely, a pointed and a round egg.
40. GOLDCREST AND MUTE SWAN
to show smallest and largest British birds' eggs.
41. CHIFF CHAFF AND WILLOW WREN
to show difference in markings.
42. GREAT TIT AND NUTHATCH
to show similarity.
43. KINGFISHER AND WOODPECKER
to show white roundish eggs laid in dark places.
44. BLACKBIRD AND RING OUZEL
to show similarity.
45. ENGLISH PARTRIDGE AND FRENCH PARTRIDGE
to show difference in size and markings.



Egg of Kestrel (top) and Sparrow Hawk (bottom).

46. GREATER WHITETHROAT AND LESSER WHITETHROAT
to show difference in size and shape.
47. CURLEW AND WILD DUCK
to show pear-shape and roundish eggs.
48. DIPPER AND LITTLE GREBE
to show difference in shape and cleanliness.
49. BLACKCAP AND GARDEN WARBLER
to show difference in markings, etc.
50. SONG THRUSH AND MISTLE THRUSH
to show difference in size, shape, and markings.

It is not necessary for anything further to be written in this introductory section as to how to observe birds, as the chapters which follow will each afford some amount of information which should be of some service.

Suffice it to say, that the young ornithologist, really desirous of acquiring a good knowledge of our British birds, should be able, after some practice, to identify a bird by its flight as well as by its song; by its habits upon the ground as well as by its nest; by its call, cry, or alarm notes as well as by its size and plumage; and then, having accomplished this, every country walk will be in itself a scientific exhibition fraught with keen enjoyment and unalloyed pleasure.

II. BIRD-NESTING WITH A CAMERA

It is a good plan for the young bird-nester with a camera to make a beginning by firing some

harmless shots at the nests and eggs of some of our commoner British breeding birds, and he would do well to make a start with the substantially built homestead of the Blackbird. The nest of this famous British song-bird is not so deep as that of its near relative, the Song Thrush, and, although it is necessary to tilt the structure forward somewhat, so as to obtain a better sight of the freckled eggs, one does not have to bring the nest so much forward as in the case of the speckled Thrush. The several photographs that illustrate this book are good examples of an amateur bird-nester's work, and many happy experiences and humorous situations are wrapt up within them.

When examined through a stereoscopic glass a bird's nest presents a really wonderful effect, the nest and eggs standing out as bold as if they were in their natural surroundings. The one great enemy of the would-be successful photographer of birds' nests is the wind. The slightest quiver or motion of the tree, grass, or bush in which the nest is secreted is sufficient to mar the clearness and detail of the whole picture, and I could tell of many an anxious wait for the wind to cease when we have been ready to fire off a shot. It is wonderful to notice the great difference it makes when the wind is blowing and when it is still, and comparisons between such examples are interesting and enable the young Nature stalker to gain experience

as he proceeds. Sometimes it is necessary to hold back an overhanging branch of a tree or bush, and many a time my arm has ached and at last I have had to let go through sheer exhaustion.

Let me tell you about a Moorhen's nest we photographed last Summer-time. The nest was actually floating on the water, and was situate a few feet from the land on a pond near which hundreds of people passed, but not one chanced to meddle with it!

Our photographer was a very careful young man, but commendably persevering. Nevertheless, he was not particularly anxious to have a ducking in the dirty pool where the Moorhens had selected their nesting site, and his efforts to reach the nest as he very gingerly trod upon a "raft" he had constructed afforded keen delight to my gamekeeper friends and myself. Arrived at his destination without reaching a watery grave, our intrepid photographer's next move was to fix his camera securely and focus the nest. Then a curious thing happened, and of this I must tell you before proceeding further. When he reached the nest there were nine eggs snugly ensconced within its rush-covered bottom; indeed, three minutes before the photograph was taken, the nest contained nine eggs. Before the photographer, however, had time to expose his plate, four of the eggs hatched out without any warning, and the chicks dived

out of the nest into the water without the slightest hesitation, the shells actually still adhering to their backs!

This most interesting point opens up a whole series of wonderful observations that might be made respecting the babyhood of birds, but it must suffice for me to draw attention to the remarkable provision that Nature has made whereby some young birds are blind and helpless when born, whilst others, which have not so much protection afforded them, are in a very advanced condition when hatched, and have the power—like these young baby Moorhens—of scuttling out of the nest within the first moment or two of being incubated and swimming about with ease and facility and obtaining their own living.

The shock caused to our photographer may be better imagined than described, but he managed to preserve both his mental and physical balances and proceeded to photograph the remaining five eggs. The plate was duly exposed, and just as the photographer was stepping backwards his foot unfortunately slipped, and the poor fellow was precipitated into the rich black water in less time than it takes to tell the story! The effect of this catastrophe upon those of us on dry land may well be imagined, and it was several minutes before we could sufficiently control ourselves to help our friend to regain his balance. The unfortunate

thing in taking photographs of this kind and experiencing difficulties and dangers of this nature is that one does not know until reaching the dark room and developing the plate whether the photograph is or is not successful. On this occasion, the photographer was in sore distress, for not only was he drenched to the skin and presented a pitiable plight, but he was afraid all his efforts to secure a picture of the Moorhen's homestead were in vain. On developing his plate, however, an excellent picture was displayed to view, so that he was amply repaid for his trouble after all.

I must tell you, however, how we contrived to bandage him up so that he might appear more presentable for his journey homewards. The black mud and water were oozing from his boots, his feet were saturated, and altogether he was the reverse of comfortable. Once more the keepers came to the rescue, for they ordered him to take off his socks, and they dexterously bound round his feet a couple of red, gaudy-looking handkerchiefs, and in this condition he trudged homewards. I think the reader will agree, however, the results justified the pains expended upon the Moorhen's family nursery, and that our photographer was to be justly congratulated after all upon securing a picture of the object of which he went in quest.

As illustrating my remarks upon the effect wind produces in taking Nature photographs out of

doors, I well remember photographing the nest of an English Partridge which was built in a very dark place (as Partridge's nests so often are), and when the photograph was taken it was blowing a regular blizzard. When the plate was developed it was found that the herbage surrounding the nest was out of focus, this being caused by the gale of wind blowing the grass about in a hopeless manner. A comparison between such a picture and one taken when the elements are more kind and the wind fiend is not lashing his wrath upon the countryside will at once show the young photographer what a vastly different result may be obtained. The nest and eggs of the French, or Red-legged, Partridge is a fine subject to photograph, the excellent detail and clearness showing up well when compared with the homestead of its English relative. It will also be observed that the French bird certainly makes a bolder attempt at building a nest than our English species. The Frenchman is a curious bird. I knew of the owner of a nest who forsook its own nest for a time and sought out an English Partridge's homestead. Therein it laid some eggs, but after a week's absence from its own nest it went back and hatched out twelve eggs! The eggs of the French bird show up much brighter in a photograph than those of the English bird because the nest is not usually situated in such a dark place as that of

Perdix cinerea, beyond which the eggs of the first-named species are lighter in colour and larger than those of its English relative.

A good photograph of a clutch of Pheasant's eggs makes a nice picture to hang in a bird's-nest academy, and careful stalking should result in the young enthusiast finding a nest-full of eggs just as they were laid one on top of another by the parent bird. It is remarkable to notice how, in the early Spring, the eggs of these birds are protected by dead leaves. The Pheasant makes little or no attempt at building a nest, and the eggs, when laid in a wood or bank where Oak or other leaves carpet the ground, are exceedingly difficult to locate unless one possesses the seeing eye.

The last photograph that our notebook reminds us of as being taken on a recent bird-hunting expedition was not secured without much perseverance and trouble. It was a Sparrow Hawk's nest built in a low tree about thirty feet high. As a matter of fact, the Hawks did not build the nest themselves, but took possession of the disused homestead of a Jay. By skilful manipulation on the part of our indispensable gamekeeper friend, the photographer was able to take his photograph in comparative comfort, for the former quickly rigged up a well-built platform of sticks strongly fastened together. A good photograph was the result, but the young bird-nester with a camera

must be prepared to face difficulties on his own account, for sometimes he will have to work single-handed and possess considerable ingenuity and knack in overcoming unforeseen obstacles that have a nasty habit of cropping up at unexpected moments.

III. LONDON'S FEATHERED FOLK

In the Springtime, when feathered folk are so busily employed, and so much animation is exhibited in the home life of our wild birds, it is interesting to have a peep at a few of the avine inhabitants of the greatest city in the world. Whilst we shall include in our list some kinds of birds which are found almost beyond the London radius, it is astonishing to notice the wealth and variety of bird life that exists in the parks, gardens, and open spaces within sound of the busy turmoil and noisy hum of the streets of the Metropolis.

With birds, however, as with every other branch of Natural History, it is a case of eyes and no eyes. I have, for example, frequently stopped to look at a pair of Ring Doves nesting in one of the tall trees in Regent's Park, or to watch a saucy Magpie disporting himself upon the green sward; but I have enjoyed my inspection alone, in spite of the fact that dozens of people were passing and repassing within sight of the birds but heeded them not. I

must candidly admit it is much the same in the country: when I hear a Skylark sing in the early Spring, I feel constrained, as it were, to look aloft so as to catch a glimpse of the little herald in the blue ether above; but I have noticed times out of number that persons who have chanced to pass within earshot of the bird went on their way without paying any attention to Shelley's "Scorner of the Ground."

As with birds, so with insects, plants, and other inhabitants of the fairyland of living things. Few people seem to realise their presence, and rush on regardless of them. To determine accurately, therefore, the variety of London's feathered population, it is necessary to cultivate the spirit of observation, and, although some kinds of birds will thrust themselves, as it were, upon one's attention, many must be looked and listened for and carefully stalked if any amount of success is to be achieved. Who, for example, is acquainted with the fact that in the London parks and open spaces such birds as the Spotted Flycatcher, Nightingale, Cuckoo, Great Crested Grebe, Kingfisher, Woodpecker, and Nightjar, together with dozens of their more common brethren, are to be observed at some time or other during the year, if the zealous bird-student will only use his eyes and ears to advantage?

It is not our intention on the present occasion to

make out a mere catalogue of birds' names, however, but to point out the salient features of a few species of birds which nest within the London area. Pride of place should perhaps be accorded to the London Pigeons, and although there are a number of mongrel breeds tenanted St. Paul's Cathedral, the Guildhall, the British Museum, the National Gallery, and other public buildings, it is to the wild Wood Pigeon, or Ring Dove, that I wish to devote attention. Few people seem to realise that this purely wild bird of the greenwood makes its nest and rears its young within the busy hum of London's streets. It is a remarkable fact that such a recluse and timid bird, such a typical example of a thoroughly wild bird, should of its own accord leave its fastnesses in the greenwood and migrate to the Metropolis. Of all my country bird friends, the Ring Dove is one of the most timid and restless. How comes it, then, that this species should forsake its country haunts, journey to London, and make its home there? Something must of necessity attract the bird, but what that something is I have never yet been able to discover. For some years a pair of these birds have reared a brood in the well-known plane tree off Cheapside. Much store is set upon this remnant of arboriculture in the heart of the City, and I remember a few years ago noticing the great amount of interest that was taken when the afore-

said tree was pruned so as to preserve it. This nesting of the Ring Dove within the City boundary almost reminds one of poor Susan's waking dream:

A mountain ascending, a vision of trees,
Bright volumes of vapour round Lothbury glide,
And a river flows on through the Vale of Cheapside.

A near relative of the Ring Dove may often be heard uttering its soft, agreeable love-song. This is the Turtle Dove, which is a Summer visitor only. This bird has always been a favourite with the poets as an emblem of faithfulness in love, but although it is a favourite bird friend of mine, I cannot agree that the Turtle exhibits any marked characteristics in this respect. It differs greatly in its habits from the better-known Ring Dove. Its flight is softer and not nearly of such a noisy description. It spreads its tail fan-like when flying, and when thus seen the bird presents a most beautiful appearance, the white edges of the tail-feathers showing up most prominently. Its plumage, too, is far different, the remarkably beautiful iridescence upon the feathers of the Ring Dove being absent in the case of the present species. As a matter of fact, a typical example of a pure Ring Dove is to be regarded as one of the most beautiful birds found in our country.

Both birds build a mere platform of sticks as a

nesting site, but the Turtle Dove's homestead is more frail than that of the Ring Dove, and is placed in a low bush or tree.

The Ring Dove is very partial to Spruce Fir trees as a nesting station. Both birds lay only two white eggs, but those of the Turtle Dove are more pinkish-white and are much smaller than those of its larger relative. When the Ring Dove rises from her nest she makes a fearful commotion and rushes through the woodland helter-skelter, flapping her wings as she goes and free-wheeling, as it were, when she reaches open country. The Turtle Dove, however, slips quietly and unobtrusively off her nest and only flies a little distance away, returning to her treasures soon afterwards.

Such birds as House Sparrows, Robins, Blackbirds, Thrushes, and Starlings are, of course, well known to all Londoners, and yet, after all, not so well as one might imagine, for I recently had a Starling sent to me by a resident of the Metropolis with the comment: "Herewith a curious bird I discovered in an empty house to-day. Is it a Green Woodpecker?"

It is pleasant to hear the mellifluous note of the sooty Blackbird in the London parks and open spaces, and to observe the dark-speckled female sitting upon her eggs in some laurel or other evergreen shrub. The female is vastly different from her sombre-clad mate. Seen at his best, a male

Blackbird, with his jet-black plumage, glistening eyes, long legs, and brilliant yellow bill, would do infinite credit if turned out of a box by Day and Martin! The female is more like a dark-coloured Thrush, and although on occasions the male takes his turn at sitting upon the egg-treasures, it is the female who mostly performs the important task of incubation.

The lyrics of the Song Thrush, and the less beautiful but stronger notes of the Mistle Thrush, often hold the townsman spellbound, especially in the Springtime, when bird-music is heard at its best. I always regard the nest of the Song Thrush as a remarkable example of bird-architecture. Whilst not nearly so elegant or tidy as the mossy cradle of the Chaffinch, or the lichen-covered nest of the Long-tailed Tit, the Thrush's homestead is a strong, substantially-built structure, well calculated to withstand the rigours of our English climate. The nest is deep, and it is plastered inside with mud and rotten wood. This is a characteristic difference between the nests of this bird and the Blackbird. The eggs are an unpaintable light blue, spotted or blotched with dark brown or black.

Young birds, when in the nest, are bad sitters for their portraits, as a rule, and it is difficult for a layman, when looking at a nest full of young birds, or a photograph of them, to realise exactly how

many chicks are in the homestead. Young Song Thrushes, however, when fairly well feathered, make a rather pretty picture, but these are nervous youngsters and will often leave the nest for the first time when suddenly disturbed. This greatly agitates the parent birds, who give vent to their feelings by scolding angrily and calling "clink, clink, clink," and even flying round the intruder in a most defiant manner. One may observe a Thrush smashing a Snail against one of the stones in the London parks, or dexterously balancing an Earthworm in its beak, then tucking it up, like a boy's Chinese cracker, and hurrying away with the tit-bit to feed its young ones in the nest.

The Mute Swan is well known as a tenant of the various sheets of water in the London open spaces and upon the Thames, and is a graceful ornament wherever it frequents.

The Robin is a favourite with almost every one. It thrusts itself upon our attention, is most trustful, and loves the companionship of humankind. It also places its nest in most curious places. I remember on one occasion seeing a Mother Robin sitting contentedly at home upon her nest in an old kettle. I chanced to place in this particular nest an egg of the Yellow Bunting to see whether the Robins would incubate the egg and rear the young one. It so happened that just as the Robins commenced to sit the only egg I could

procure to place in the kettle-homestead was that from a Bunting's nest I had watched for some little time, where I knew the eggs had been sat upon for some days. So it came about that within twenty-four hours after placing the Bunting's egg in the Robin's nest, the Mother Robin hatched the egg. Imagine my excitement when I espied the male and female Robin perched on the top of the kettle chattering one to another in most extraordinary language. Cock Robin was evidently saying to his mate: "Well, how on earth have you managed it? For only a few hours you have been sitting, and a chick has been born to us. You have eclipsed all previous records in our experience. How have you accomplished it?" And the poor little disconsolate mother seemed to shake her head and reply: "Goodness only knows!" To cut a long story short, the female Robin settled down once more upon her eggs and the young stranger. Eventually all the Robin's eggs were safely hatched and the chicks reared. So, too, was the young Yellow Bunting. Both the Robins paid every attention to it and treated it as one of the family!

We can gain a good general idea of the Swift's appearance as the bird flies rapidly through the air, squealing as he goes. The sharp-cut and long wings and the small head will doubtless arrest attention. The wing-stretch of this bird is re-

markable to notice, and when the bird is in motion its powers are wonderful to behold. The mad rush of the Swifts on a Summer's evening is one of the most interesting birdland sights, and the incessant scream that is uttered by the little company adds a touch of weirdness to the scene. Underneath the roofs of buildings, in church towers, ruins, and other similar places the Swift finds a congenial nesting place and there constructs a paraphernalia homestead. The eggs are white and two or three in number. The great amount of good which this bird and the Swallow and Martin perform in ridding the air of insect-pests is inestimable, and the large family of Warblers also perform useful work in this respect.

A number of interesting birds are always on view at the Zoological Society's Gardens in Regent's Park, not only in the collection itself, but wild birds in the gardens. I have heard Blackbirds and Thrushes there singing an evening chorus. I have heard the Hedge Sparrow chant his love-song and the Chaffinch tune his lute. I remember, too, that the only time I ever heard a House Sparrow sing was at the Zoo Gardens. The bird was exploring some spouting on the small Mammals' house, and all at once surprised me by uttering quite a musical little song! I could hardly believe my own ears, but my eyes did not deceive me. Once and once only have I heard

this much-maligned bird utter any other note excepting its well-known chirrup, but even then the trim, clean, country-bred bird I listened to did not approach the song-power of his smoke-begrimed cousin of Regent's Park. I imagine that this London Sparrow made the Zoological Gardens its permanent home, and had picked up the notes of some of the captive birds in the collection.

The Gullery at the Zoo is at all times a pleasant place to spend half an hour, for many interesting bird-tenants are there exhibited.

In the Sydenham district, just recently, a trusty friend records the presence of some Tawny Owls, whose mellow and weird hoot at night-time has occasioned much interest among bird-lovers in the Metropolis. This Owl lays the largest egg of any of our five species of Owls, for we may now count the beautiful Little Owl as a breeding species in our country. These are useful birds indeed, and farmers should encourage them without hesitation. While some species do commit an amount of damage in game preserves, generally speaking Owls are a blessing to agriculturists, and, in a way, to you and me. They rid the land of vast numbers of obnoxious rodents, such as Rats, Rabbits, and Mice, keep down birds and other creatures, and in various ways help to preserve Nature's balance. We shall have something

further to add concerning them in the short section entitled "Our Feathered Policemen."

In the Winter-time the neighbourhood of London is visited by the Meadow Pipit, a near relative of the Titlark and the Skylark. Half an hour's ride from Charing Cross will take the wayfarer to its nesting haunts. This bird possesses a tittering song: it utters it whilst in the air, after the manner of the Lark, but it does not in any way emit such soul-stirring music as the "blithe spirit" of which Shelley has written so delightfully in his well-known Ode.

The Gulls which visit the Thames and the sheets of water in the parks during Winter-time seem to afford a fund of interest to the Londoner. These birds leave their wild fastnesses and make London their home when hard weather compels them to come inland and depend, to a large extent, upon what they can chance to pick up from the surface of the water. It is a pleasant sight to see the Gulls being fed along the Thames Embankment, the worker sharing his meal with the birds, these latter simply revelling in their acrobatic feats in the air as they swoop down upon some precious tit-bit that is tossed towards them. These Gull-visitors are mostly Black-headed Gulls, but the brownish hood of Spring and Summer is lost in the Winter and is not regained until the following Spring.



Barn Owl.



Tawny Owl.



Contents of Owl's Pellets.



Owl's Pellets. Note size as compared with a Penny.

Not far up the Thames Valley a most interesting bird may be located in the Reed Warbler, whose remarkable nest is well worth searching for. On one of the Eyots a friend of mine discovered between twenty and thirty nests on one occasion, and once having seen the deep structure—so cleverly suspended among the reeds—it is impossible to mistake it again.

Much more might be written of London's Feathered Folk, but sufficient has been stated to give some idea of the wealth of bird-life to be observed in and around the Metropolis, if only one will cultivate the seeing eye and the receptive ear.

IV. OUR FEATHERED POLICEMEN

Of all feathered fowl perhaps our friends the Owls are the strangest. Their odd facial expressions and curious forms and habits make a strong appeal to all those who have a love for birds, whilst to the keen student of our feathered population the few species of Owls we possess in this country are a never-ending source of interest.

With the exception of the Short-Eared Owl, our remaining four kinds are nocturnal in their habits, and their good deeds more often than not pass by unnoticed, because their exploitations are carried out during the silent watches of the night.

Possessing a soft, gliding, and almost noiseless

flight, it is small wonder that an Owl is so successful in its hunting expeditions, stalking and approaching its prey almost unawares, and to see one at the gloaming hour assiduously working along some favourite hedgerow is a sight not easily forgotten. The extent of the wing-stretch is very noticeable, and the bird really appears—when seen upon the wing—larger than it is when at rest.

I remember watching a beautiful specimen of a Barn Owl on one occasion, and had the rare good fortune to put the bird to flight during the daytime. It is rather an interesting story culled direct from one of my many wanderings in the wonderland of bird life.

I was making my accustomed pilgrimage through a favourite belt of woodland in early Spring, and, as I reached a little clump of tall Laurels growing in the wood, I found to my regret the recently deceased body of a fine Barn Owl upon the ground.

Probably the bird had been shot or trapped by the keeper upon the estate, he, stupid fellow, being too ignorant to realise that he was in reality destroying one of his greatest feathered benefactors.

I stooped down to examine the mangled corpse, and, after much indignation at such unwarranted slaughter, dived under the tall Laurels hard by

to search for some early nests of mellow Blackbird or speckled Thrush. Judge, then, of my surprise when I gazed almost immediately above me, close to the body of the dead Owl, and saw a live Barn Owl sitting there and apparently keeping vigil over the corpse of his late consort! Unmoved by my presence, the beautiful soft-clothed creature continued to sit there—a veritable picture in white and tawny as seen against the dark, sombre green of the Laurels.

My unexpected friend blinked at me in the manner these feathered fowl are wont to do, eyed me suspiciously, but refused to budge from his environment.

My heart was too full for words; what pathos I seemed to be able to read in the bird's face; what courage the Owl possessed to sit there guarding the body of its dead comrade, and what a rent in the lives of two happy and useful creatures had been caused by the wanton slaughter referred to.

At last, the live bird decided to quit the sickening scene, and away he went through the wood on unerring wings, rushing headlong through the dense growth with remarkable cleverness, for he never once came into contact with anything that would hamper his progress. The power this bird has upon the wing is very remarkable, and I would hardly have credited that, when flying at

such a speed, the bird could steer clear of the many obstacles in its way.

You may well imagine my pent-up excitement all this time, and how eagerly I watched the fine sight which met my gaze. The trees were as yet leafless, and it was one of those beautiful Spring mornings with which we in England are so familiar. Thus it was quite easy to follow the Owl as it sped on its way through the wood, until at last it reached the outside boundary, which was bordered by a wide open meadow.

Without hesitating, the bird dived from the wood and rushed across the green meadow at a height of some forty feet in the air until my eyes could follow it no longer, and it eventually disappeared into a strip of woodland on another part of the estate. Incidents such as these, cropping up so unexpectedly, go to make the study of bird life of the woodland, field, country lane, or elsewhere delightful and captivating; whilst if, as on the aforesaid occasion, there is a human interpretation as well, interest is redoubled and a good moral the result.

Owls generally are rightly entitled to the character of feathered police, for they are to be considered among the chief benefactors we possess in keeping down Rats, Mice, small Birds, Moles, Shrews, Insects, Rabbits, and other animals.

They have enormous appetites, and I have

known one Owl to swallow nine Field Mice, one after the other, until the tail of the ninth stuck out of its mouth and testified to the fact that the bird was "full inside."

All our British species lay white eggs, from the small white shell of our latest recruit, the Little Owl, to the large egg of the Tawny, Brown, or Wood Owl.

These two species lay roundish-shaped eggs; the eggs of the Short-Eared Owl and the Long-Eared Owl are more oval, whilst the egg of the Barn Owl is more pyriform and easily distinguished from any of its relatives.

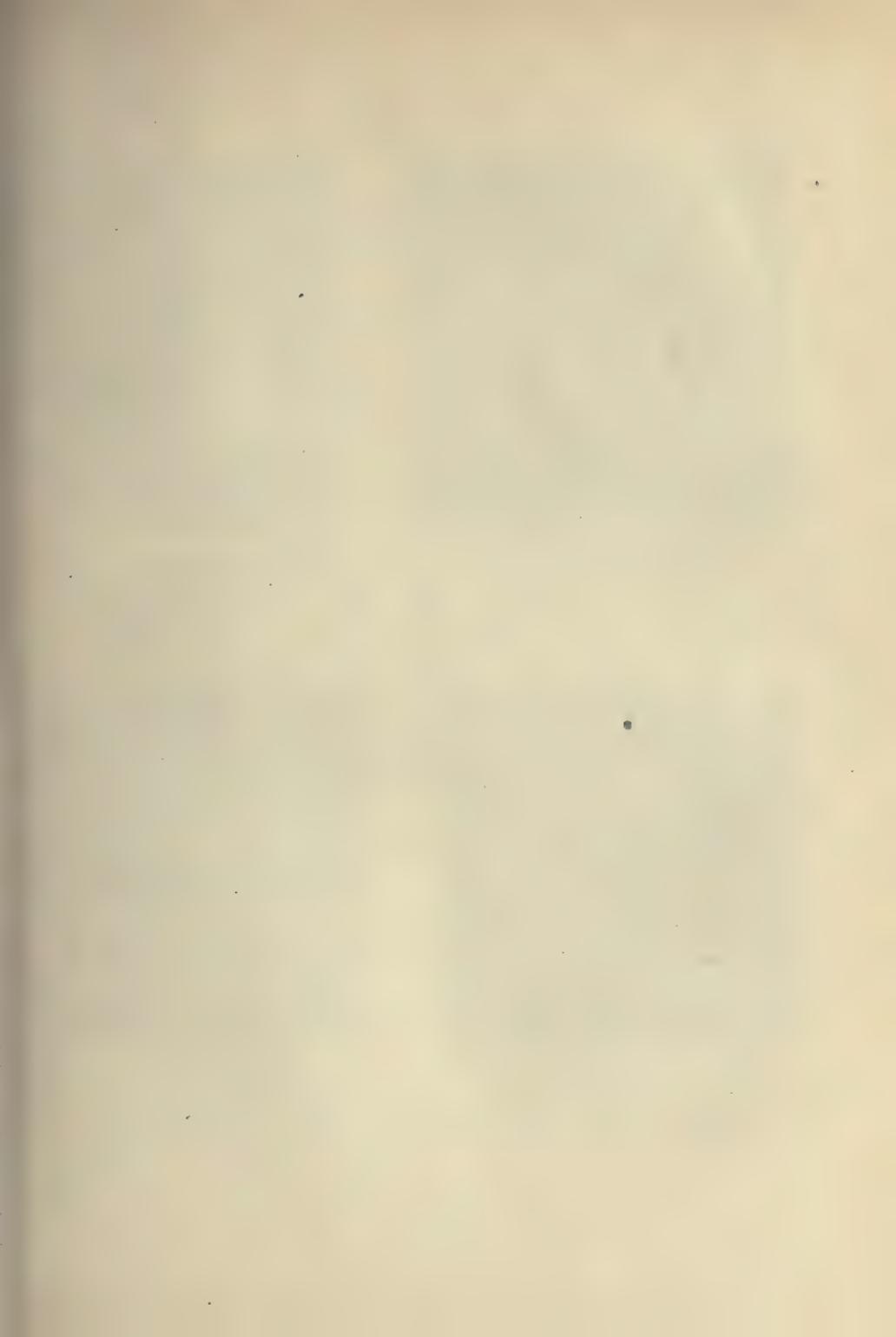
In the nature of their vocal powers, our British Owls vary a good deal, for the Little Owl cries a plaintive and penetrating "peewit," very much like the better known bird of that name; the Barn Owl hoots, snores, screams, and hisses; the Long-Eared Owl utters a sort of mewling cry as well as a short, barking note; the Short-Eared Owl has a harsh call and cry, and also resorts to a vicious snapping of the bill when alarmed or angered; and the fifth species, the Tawny or Brown Owl, is responsible for the weird and mellow hoot which one may hear of a still evening, and to which Shakespeare and the poets have referred on many occasions.

V. SOME BIRDS I HAVE MET

It is appropriate that the Cuckoo should be accorded pride of place in this essay upon feathered folk, because for weeks past his plaintive and well-known call has been continually heard along the countryside. There are a great many people living in the country who have never to their knowledge seen a Cuckoo in the flesh, although they may have listened to its plaintive callings for a long period of years.

A similar remark also applies to the Nightingale. On first acquaintance with the last-named species keen disappointment is expressed at seeing such a commonplace-looking bird as the origin of such brilliant and passionate music. Those who are unacquainted with our British birds expect on observing the Nightingale for the first time to see a bold, brilliantly-coloured bird which cannot fail to thrust itself upon one's attention. I have known the Nightingale to be often mistaken for the Common Sparrow, and have before to-day met boys with the eggs or young birds. On remonstrating with them they have promptly justified their robbery by calling the birds or eggs "Spadgers."

As regards the Cuckoo, it is often mistaken for a Hawk, and those who chronicle its early appear-





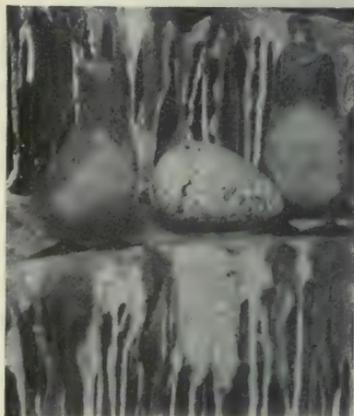
Little Auks in Winter.



Robin coming out of Nesting-Box.



Young Skuas



Two Young Guillemots and Egg.

ance among us during March, and not having heard its well-known cry, are doubtless frequently mistaken in their identification of the bird they have observed.

Surprise has been expressed by the companions of my rambles as to the small size of the bird when I have pointed the Cuckoo out to them, and more so still when I have shown them an egg, which scarcely exceeds in size that of the Skylark. A Summer or two ago I was in the wild greenwood, and had the rare sight of seeing half a dozen Cuckoos carrying out a series of vocal blandishments whereby to win the heart of a female bird. One particular bird I had under observation was in great distress, and constantly uttered its well-known note. It sang "Kook-oo" repeatedly for over a hundred and twenty times without a second's cessation, and only stopped at that number for a few seconds before it started calling again. That morning in Cuckoo-land will not be readily effaced from my memory, and as I lay in bed that night the plaintive call was still ringing through my ears. Towards the end of June the song greatly depreciates in its softness and plaintive character, and it is rarely heard after July 1.

Among feathered folk, the Nightjar may be considered one of the most interesting, especially as it comes forth from its hiding place of the day when twilight shadows are fast falling. It is

nocturnal in its habits, squatting and snoozing throughout the heat of the day. When lighted upon in the daytime it blinks at the observer and seems almost dazed, but when it is getting dusk one observes this very interesting bird at its best. It feeds on night-flying insects, wheeling round and snapping at some denizen of the air with unerring aim and adroitness. It swoops down at unexpected moments, and often brings its wings up over its back with a loud report as of a pistol shot. This is a bird which strikes me as one of those species which hates being watched and loves seclusion. When watching them during their night prowls I have on several occasions had the birds dash at my head in no uncertain manner, and only by a rapid ducking have I escaped a snap from them. They have capacious and hairy mouths, which are just suited for the capture of insects, and their flight reminds one of a large Swallow. They lay two eggs upon the bare ground, and these are very similar to the bleached stones and other surroundings, an instance of protective colouration.

The note is one of the most curious utterances in the whole realm of birdland, and when all Nature is hushed the love song strikes upon the ear in a very weird manner. It may be described as a sort of jarring warble, and a somewhat similar noise may be made by rapidly vibrating the

tongue against the roof of the mouth. When perching the Nightjar usually—but not invariably—squats lengthwise on a branch, and not crosswise, as birds in general do. It haunts bracken-covered slopes in the neighbourhood of woodland, and is one of the latest bird visitors to arrive from across the seas. Gilbert White narrates in his charming *Natural History of Selborne* many interesting habits of this bird, but his observation that the country people of his time had a notion that it was injurious to weanling calves, by inflicting as it strikes at them a fatal distemper known by the name of puckeridge, has long since been exploded. White mentions one particularly interesting habit of this bird, namely, he observed it catch by means of its middle toe a Moth when on the wing. This toe is furnished with a serrated claw, and, by a bend of the head, the bird delivers the insect into its mouth!

Another interesting tenant of the woodland is the Great Spotted Woodpecker. This species does not seem nearly so well distributed as the Lesser Spotted and the handsome Green species, but I know of more than one district where all three species nest. The Great Spotted is a beautiful bird in its black and white dress, brilliant crimson head, belly, and under tail-coverts. It feeds for the most part on insects which lurk in the crevices of the bark and decayed wood of trees,

the bird tapping vigorously on a branch and thus producing a curious rattling note, called "drumming." It is the most silent of the three Woodpeckers mentioned, the shrill, high-pitched "chee, chee, chee," of the Lesser Spotted and the loud, laughter-like notes of the Green Woodpecker being much more frequently heard. It is difficult to locate a Woodpecker in a wood when the drumming noise is made, but a little patience will bring its reward, and it is a rare sight to watch the industrious bird tapping at the bark to waken the insect or grub, and licking it out from its hiding place with its long tongue.

The Razorbill must certainly be regarded as one of the most interesting of feathered folk, if for no other reason because it is to-day the nearest living relative of the now extinct Great Auk. It is a bird of our coast-line, and has acquired its English name because of the razor-like character of its beak. It is interesting to note that every year numbers of these birds appear to suffer mortality, several of them often being picked up along the seashore. Here is an important point in bird life at home which requires elucidation, and those resident near the haunts of these birds would do well to devote their attention to this curious phenomenon.

Another species mostly found in the near vicinity of the sea is the Oyster Catcher. It is

intense black and pure white in colouration, and hence is called in some districts the Sea Magpie. It has a brilliant orange-yellow bill, and purplish-pink legs and feet. It is certainly one of our most handsome shore-birds, and is a splendid sentinel, proclaiming to all its feathered relatives within sound of its vociferous cry that danger threatens. Although named Oyster Catcher, and feeding on shellfish, it does not seem to possess any partiality for Oysters. The beak is very strong and powerful, and by its aid the bird is enabled to detach Limpets from the rocks with great cleverness. It is an engaging sight to watch these birds drive their bills into a Mussel-shell, strike asunder the closed valves, and scoop out the luscious contents.

An interesting tenant of downs and other parts of the country is the Corn Bunting. It thrusts itself upon the attentive ear because of its rusty, wheezy little song, which is uttered as the bird perches on the summit of a Furze bush, a clod of earth, or telegraph wires, the latter being a very favourite habitat. It is a plain-clad bird, the largest of our five species of Buntings, and is sedentary in its habits. It is a late breeder, the nest being usually built in May and is placed upon or close to the ground. The homestead is made up of dry grass and roots, with a lining of horsehair and fine fibres. The four to six eggs are dull purplish-white or pale yellowish in ground

colour, streaked and blotched with dark brown, and of a similar nature to the curious markings of other British Buntings, which has acquired for the bird the local name of Scribbling Lark.

VI. BIRD-LIFE IN MARCH

There is little doubt that the Skylark is the most prominent bird in the country at this season of the year. That being so, he, blithe spirit—as Shelley so aptly described him—shall have the place of honour in this little sketch of bird-life during gusty March-many-weathers.

Hail, rain, sunshine, wind, or snow finds the Skylark in the same happy mood—towering aloft on quivering wings pouring out the while that mad, exquisite lay. Shelley called it harmonious madness, and such it is. Let me endeavour to write down a description of the song as it seems to strike me as daily I watch and listen and never tire. As the feathered jewel proceeds in its aerial flights its song seems to increase in volume, sweetness, and cadence. Right unto its final outburst, just previous to the abrupt lightning fall to mother earth, the bird appears to gather music as it goes. Albeit, the song seems little varied, yet it can never become monotonous! I have listened to the Lark now for over twenty-five years, and I still listen with wonderment and

delight. Its sweet chromatic lays and trills—call them what you will—uttered as they are during such prolonged and interesting song-flights, always hold me entranced, and no sooner have I finished watching one particular bird alight safely on the ground than I find myself eagerly scanning another bright chorister just ascending, and I have often been entertained for a whole morning in Lark-land alone.

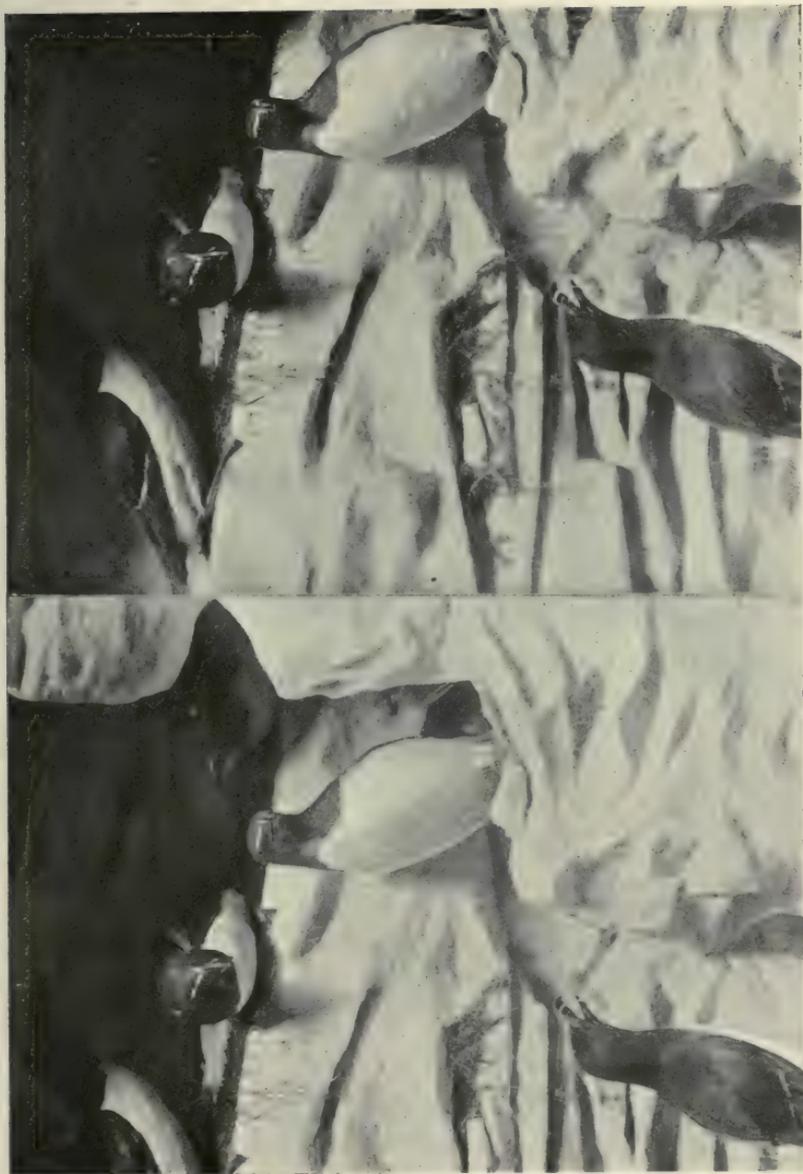
As I have remarked previously, the Lark sings in all weathers; his song does not always “fall down through the golden sunshine like a flood of sparkling melody,” as some writers assert. During March the pairing season is in full swing, and the attention given by the males to the females is interesting in the highest degree. First one and then another would-be lover proudly struts in front of his would-be lady-love, then one after another they soar aloft, rivalling each other in the measure and sweetness of their songs. It is all very wonderful, especially when one witnesses these little Lark-courtships day by day. We must leave the Lark with all its tender joyousness; we may return again on some future occasion.

Next to the last-mentioned minstrel, the Rooks and the Tits are perhaps the most prominent birds in March-many-weathers. The former are increasing very rapidly in our country, and there seems good reason for congratulation, because,

black as he is sometimes painted, during the greater portion of the year he is dexterously searching and devouring the injurious Wireworm. Rooks are very sagacious birds, as almost every one knows. They are predatory, too, and often rob the ubiquitous Sparrows of the crusts and tit-bits they have secured from a neighbouring dust-bin!

All the Titmice are interesting and extremely useful birds, but the Great Tit or Oxeye is perhaps the most engaging of them all. I can only refer in this essay to the nature of his voice—his mimicry. Just recently I heard one fine yellow-breasted specimen uttering, if you please, the notes of the delicate little Chiff Chaff—the harbinger of Spring. It was in a favourite copse of mine, and had I not seen the Tit I certainly should have been grossly deceived as to the identity of the bird responsible for the song.

This same bird then changed the tenor of its mimicry, and “pinked” like the sprightly Chaffinch. I was then surprised to hear the clever musician before me utter a few strains of the Robin’s song, and he finished his performance with the human-like whistle of the Nuthatch! Lo and behold, too, a Nuthatch answered the summons, and appeared on a fine oak a few feet from the mimic! He seemed in sore straits, and chirped and whistled until he was tired, then,



Razorbills on Rock.

Mouse-like, turned his attention to crevices in the bark for the lurking insects. The Yellow Bunting is now uttering his short but pleasant notes, and the Chaffinch is daily securing a fuller measure of his song.

The manner in which the songs of the Hedge Sparrow and the Starling are uttered affords a striking illustration of the variety which goes to make bird life such an interesting and fascinating study.

The Warbler—for such he is, and not, as is so generally supposed, a Finch, like the House and Tree Sparrows—might easily pass unnoticed by the casual observer, so quiet is he in his movements, and so secluded in the Hawthorn hedge, because of his sober dress harmonising with the brown and grey twigs. There the gentle little creature perches within a dozen yards of me as I write these lines, singing that delicate but extremely pleasant warble which many of us know and love so well.

How different is the manner of utterance of the mimicking Starling! He seems to do everything possible to attract the attention and notice of the passer-by as he perches on a neighbouring chimney-pot; he seems to revel in smoke and smuts, and the more one notices him the more he appears to enlarge upon his extraordinary vocabulary of utterances. The vocal powers of

the Starling cannot be called a song, though true it is that I have heard some individuals singing quite sweetly and well. It strikes one as more of a curious sort of chatter with a long drawn-out whistle, such as one uses when surprised. These birds, the Rooks (which are very near relations to the last named), and the House Sparrows are amongst the earliest to nest, and all three have now been engaged in nest building and repairing for some weeks.

There are others, too, busy nesting, for every March I find nests of the golden-daggered Blackbird and the Hedge Sparrow quite ready for the reception of greenish eggs blotched with brown in the case of the Blackbird, and unpaintable shells of delicate light green belonging to the Hedge Sparrow. It is a pleasure to light upon the eggs of any wild bird early in the year; the first nest and eggs of the season thrill the enthusiast with excitement, and there is an impatient longing for a daily increase in the sweet love songs of happy birds. It is one of the greatest anniversaries in the ornithologist's year.

The Song and Mistle Thrushes are both singing loud and long. Occasionally the little Brown Wren pours out that strong and captivating song of his; the Ring Doves have been saying, "Don't scold so, Suky," for some weeks. The screaming Jays and fighting Starlings, the graceful Lap-

wings and laughing Woodpecker, the speckled-breasted Fieldfares and rosy-red Bullfinch, the sooty Blackbird and shrill-voiced Meadow Pipit all call for attention during gusty March, and towards the end of the month the enthusiastic bird lover listens and looks at every likely spot for the first Summer migrant.

VII. BIRD-LIFE IN APRIL

A wet, dismal morning; "the season" about three weeks late; Nature all around still wearing her Winter apparel, and the Nightingale singing joyously to me in the old-loved spot once more! It is April 14, and the far-famed minstrel is four days earlier than last year—indeed, many Summer migrants have been recorded which are much earlier in their arrival than during the last year or two. To me this seems exceptionally strange; here we have an extremely late season, at the time of writing there is hardly a leaf on any tree save for the Elder and the Wild Cherry, and yet the Cuckoo, the Nightingale, the Tree Pipit, the Chiff Chaff, the Wheatear, the Wryneck, the Willow Warbler, and the Wood Warbler have all been heard or seen by me personally by the 14th of the month, with the exception of the Cuckoo and the Wryneck, and these have also been authentically recorded in the district!

The Chiff Chaff was somewhat late; I did not hear his two welcome notes—which so much resemble his name—until April 7, but it seems fallacious to take too seriously the first date on which a migrant is seen or heard as the date of its arrival. Thus a correspondent in Somersetshire writes me that the Chiff Chaff was first heard there by him on March 31, the Willow Warbler on April 7, and the Blackcap and the Lesser Whitethroat on the 10th, yet in Hertfordshire the Chiff Chaff and the Wheatear were the only migrants included in my list prior to April 14.

With the surroundings so damp and the season so late, it seemed fiction instead of fact when I eagerly informed my bird friends of having just watched one of those delightful song-flights of the Tree Pipit in his favourite haunt, having heard the first strains of England's sweet-voiced Philomel, the pretty little warble of the Willow Wren, and the tremulous song of the green-liveried Wood Wren.

Since these first few lines were penned, how different have the surroundings been! On the 17th of the month a spell of Summerlike weather set in, and continued until the end of the month, with only a cold day or two to mar our comfort. And what a change by the countryside! All is now verdant green, the copse resounds with the cry of "Cuckoo!" and the indescribable music of



Female Great Crested Grebe and Young.

many Nightingales. The Cuckoo was late in coming—he did not gladden us with his welcome notes to any extent until April 20, but here a week or so afterwards he is to be heard on every side!

On the 21st the woods were full of music, Black-bird, Thrush, Chiff Chaff, Wood Warbler, Willow Warbler, Green Woodpecker, Wren, Tree Pipit, Chaffinch, Nuthatch, various Tits, the love song of the Kestrel (not so harsh and unmusical as one would expect from a bird of prey), Ring Dove, Jay, Hedge Sparrow, Robin, and, last but not least, the Blackcap.

I did not observe the Greater Whitethroat until April 28, and although the Sand Martin, House Martin, and several other migrants have been reported to me, the only other harbinger on my own list is the Turtle Dove, whose soft voice I also heard on April 28.

Young Robins, Thrushes, and Blackbirds have now been out some days; the Wren has young, and the Titmice have all got nests, for they are early breeders. Several Blue Tits have nests in the lamp-posts of the City, and when it is borne in mind that a two-inch gaspipe runs up the middle of the post the wonder at a bird choosing such a nesting site increases.

There is a great deal more bird-life in April which needs mentioning to make this sketch com-

plete. The Ring Doves are much noisier than when we last wrote, and, spotting one by the side of the woodland glade, we notice the soft and delicate grey of his head and the white ringlet round the neck. Just latterly the most diminutive bird in Europe—the Golden-Crested Wren—seems to have become more abundant, and the Robins are singing loud and long one against the other, and some particular birds utter the sweetest music imaginable, so flute-like and mellow are the notes.

The Chaffinch is in full song, and the Yellow Bunting—what a fine bird he is in his yellow plumes—is daily assuming his little ditty, which, being translated, runs:—

A little bit of bread and no cheese.

The Wren is in much fuller and continuous song and seems to thrust sweet music at us if we pass him by unheeded, whilst the graceful Lapwings on the ploughed lands have by this time laid all their pear-shaped eggs.

The Blackbird is in beautiful voice; it is slow, measured, and mellow; so different is it from the sometimes screeching notes of the Song and Mistle Thrushes. For the most part, the song of him of the golden dagger seems melancholy and sad, but the poet knew his bird when he sang:—

Thou hast thy matin and thy vesper song.

A Jay dips across the wood in front of us, and frightens every living creature within sound of its shrieking alarm cry, and a startled Pheasant glides into the woodland glade for seclusion.

There are two Finches which are often overlooked in the country, probably because they are somewhat unattractive birds both in their general appearance and in the nature of their vocal powers. These are the Greenfinch and the Hawfinch. True, the former in his green livery is a fine fellow, but the stout beaks and stiffness of both birds accounts in a measure, I think, for the inattention paid to them.

The Common Partridges are love-calling now, and never was a better time presented than at this season for watching the industrious Titmice at their patient and persevering work of destroying the lurking insects and their larvæ.

The Great Titmouse is perhaps the most common in our district—he is certainly the noisiest Tit with which we are acquainted—but the Coal Tit, Long-tailed Tit, and Blue Tit are by no means uncommon. The Skylark hardly seems in such full song as heretofore; they are mostly paired now, hence the love-songs are not nearly so continuous. The same remarks apply to the Hedge Sparrow.

There is a busy scene at the Rookery just now, and the “croos,” and “crooks,” and other

language (which is apparently fully understood by the feathered occupants) is very wonderful to listen to.

Several other Summer visitors are also due. The mimicking Sedge Warbler, the sweet-singing Garden Warbler—which some people consider little inferior to the Nightingale—the ventriloquial Grasshopper Warbler, the Reed Warbler, the Nightjar, the Swift, the Corncrake, the Spotted Flycatcher, and the Red-backed Shrike will soon be amongst us.

VIII. THE DEPARTURE OF OUR SUMMER BIRDS

Most of our thirty odd purely Summer migrants have bidden us adieu by some time in September. There are a few which leave before August is out, such as the Swift and the Cuckoo; there are a few others—Swallows and Martins, etc.—which are loth to quit our shores and stay on until October and even November. It is interesting to notice that the Swift, although one of the latest birds to arrive among us, is one of the earliest to take its departure. This bird is rarely recorded as appearing much before the last days of April or early in May, but its sojourn is a short and busy one, and by August the feathered visitor has taken his departure to far-away Africa.

The adult Cuckoo is another bird who hies

away from us at an early date, and it is a remarkable fact that the young Cuckoos are left behind and have to find their way across oceans and continents unaided and unaccompanied. Why is it that this pleasing bird wings its way regularly for the Winter to Central Africa and Southern India, and does not make a mistake, and turn up at some unexpected, out-of-the-way land where it has not been previously recorded? The matter seems even to-day, when we profess to know so much about birds, as great a mystery as ever it was. Towards the end of August a fine young Cuckoo was found wandering about in a street in which I was staying in the North of England, and an examination of the bird revealed that it was a credit to the foster-parents responsible for his upbringing—plump, healthy, and vigorous. The adult Cuckoos had by that time mostly taken their departure. How could this precocious youngster find his way across unknown seas and lands when he himself had never previously been out of England?

That mellow-voiced Blackcap, which charmed us so with its minstrelsy in the Bramble-bush at the far corner of our favourite copse—whither, and when, did he vacate his haunts and leave us to mourn his loss? We experienced no difficulty in making his acquaintance from mid-April until June was out. Thereafter we caught sight of

him occasionally, perchance leading his family through the tangled Briar-bush, and preparing them for the long migration journey, but eventually we lost sight of him and his family, and their departure from the wild greenwood was silent, their going was unseen and unheard.

The Nightjars which frequented that open tract of country by the big wood every Summer evening, and made the whole countryside vibrate with their curious jarring warble—gone are they, but when did they go? Did they collect together in little companies ready for the journey, or flit off independently of one another, or in pairs, or in family groups, or what?

The Terns, which fascinated us with their graceful evolutions during the Summer-time, have forsaken their old haunts and have moved onwards. Five species of these most delightful feathered friends breed in our island home, but they are all migrants, and come to us in the Springtime. The pair of Nightingales who never disappoint us in their visit to the thick blossoming thorn-bush in the Summer, were last seen busily engaged feeding their young and uttering a monotonous, complaining note, but some little while afterwards the voice ceased, the birds were never seen again, and they have gone. But when did they leave us—by daylight or at nightfall, and how did they go? Do they perform their journeys bit by bit,

or fly straight away in a rush for sunnier climes, where the Winter may be spent?

The trim and elegant Wheatears, among whom we spent so many pleasant hours during our Summer holiday by the seashore, or in its near vicinity, when did they suddenly make up their minds to leave us? One day we saw quite a number of old and young birds flying along the coast; the next day they were gone. We did not, however, see them fly out to sea, and a few days afterwards we noted further birds flying along the sandhills, seeming perfectly at home and not in the least hurry to depart! The only bird of prey which is a Summer migrant—the Hobby Falcon—may be observed occasionally in our English woodlands—it is not a common bird at any time—but we suddenly, and without any warning, cease to notice this high-spirited bird visitor; its departure is silent and mysterious, no noise, no bustle, no excitement.

Although some individuals of the dapper little Stonechat are to be found among us all the year round, in some districts in Summer, in others in Winter only, he is rarer at the latter season, and no doubt a large number leave us in the Autumn. Others have a partial migration, and it is interesting to notice that a number of different birds known to most of us shift their quarters during Autumn and Winter, and their places are occupied

by other birds belonging to the same species which have reached us from elsewhere. The Song Thrush, which reared her spotted chicks in the Laurel bush in the shrubbery, is probably not the same bird which regularly comes upon the lawn searching for worms and other tit-bits during the Winter-time, and that bold bird which so dexterously smashes Snails on the flint stones by the rockery will not be the same bird which in the early days of the New Year will charm our ears with its liquid song.

The Spotted Flycatcher, which reared its chicks in the old Apple tree in the orchard, or which built such a cosy nest in the porch overgrown with Roses, Clematis, or Vine, was one day missing. For several days he and his mate were seen on the railings with their five young ones engaged in catching more insects than one would care to count—over forty separate journeys in a quarter of an hour I observed one particular bird make one Autumn—and their engaging and active habits could not fail to attract notice. One day they were missing, but we did not witness their departure. Their exit was a silent one; no gathering together of the clans, as it were, no hurrying or scurrying; everything was carried out silently and without excitement or noise. The Tree Pipit, whose fascinating song-flights were such a feature of our country walks in the



Minnows.



The Harmless Grass Snake.

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Summer-time, and who never, or rarely, disappoints us in the Spring by appearing in its favourite watch-tower, has disappeared, and by now will be well on its way to southern climes. When did we last see the bird mounting in the air; for how long have we missed him, and did we see him go? I venture to answer in the negative.

In the departure of our Summer bird friends we have compensation, however, in our Autumn visitors. It is an easy matter for those resident upon our coasts possessing the seeing eye to report without difficulty that the great inrush of Autumn migrants has commenced. Various Waders, Golden Plover, Crossbills, Snow Buntings, Meadow Pipits, Woodcock, Snipe, and a host of other feathered creatures commence their Autumn migrations during mellow September, and even those of us who are less fortunate, perhaps, and live inland, may observe the appearance of new bird friends along our favourite lanes, in the woods, and among the fields, meadows, and streams.



CHAPTER X

BRITISH REPTILES

ADDER—GRASS SNAKE—SLOW WORM—LIZARD

MANY people, for some reason best known to themselves, do not like Snakes, Newts, Frogs, Toads, Earwigs, and many other creeping and crawling things. Miss Marie Corelli, in an introduction to one of my books, has wisely said that she always rather mistrusts not only young, but grown-up people, who are afraid of Dogs, who care nothing for Birds, and who utter exclamations of repulsion or disgust at the sight of a Mouse or a Spider! They do not seem (says Miss Corelli) exactly "all right," as the phrase goes—for if we are sane and healthy we must be well aware that there are very few creatures that will do us any harm unless we provoke them to self-defence.

With these wise words from the pen of one of our most delightful and gifted writers, I feel sure all my readers will agree, and I am tempted to write thus because of the subjects chosen for this chapter.

Whilst the Grass Snake is quite harmless, and

the Adder is the only venomous or poisonous reptile that we have upon the British list, it is, as Miss Corelli hints, only in the case of self-defence that the Adder puts its poison fangs into operation. Whenever it can do so, the Snake will glide away into the undergrowth, but when the dam (the female) has young, or when otherwise molested, she makes no secret of showing her powers of self-defence.

One of my best friends is the most experienced reptile hunter and student in this country. He is our greatest living authority on British reptiles, and has hunted and handled thousands of specimens—venomous and otherwise—yet no harm has ever befallen him.

There is so much nonsense written nowadays of the designs of some of these so-called harmful animals, that it is a thousand pities misleading statements are permitted to pass unchallenged. Even two of our commonest and most useful Amphibians—the Frog and Toad—are positively loathed by many people, and few seem to realise the wonderful metamorphoses through which they pass, and their economic value as insect eaters.

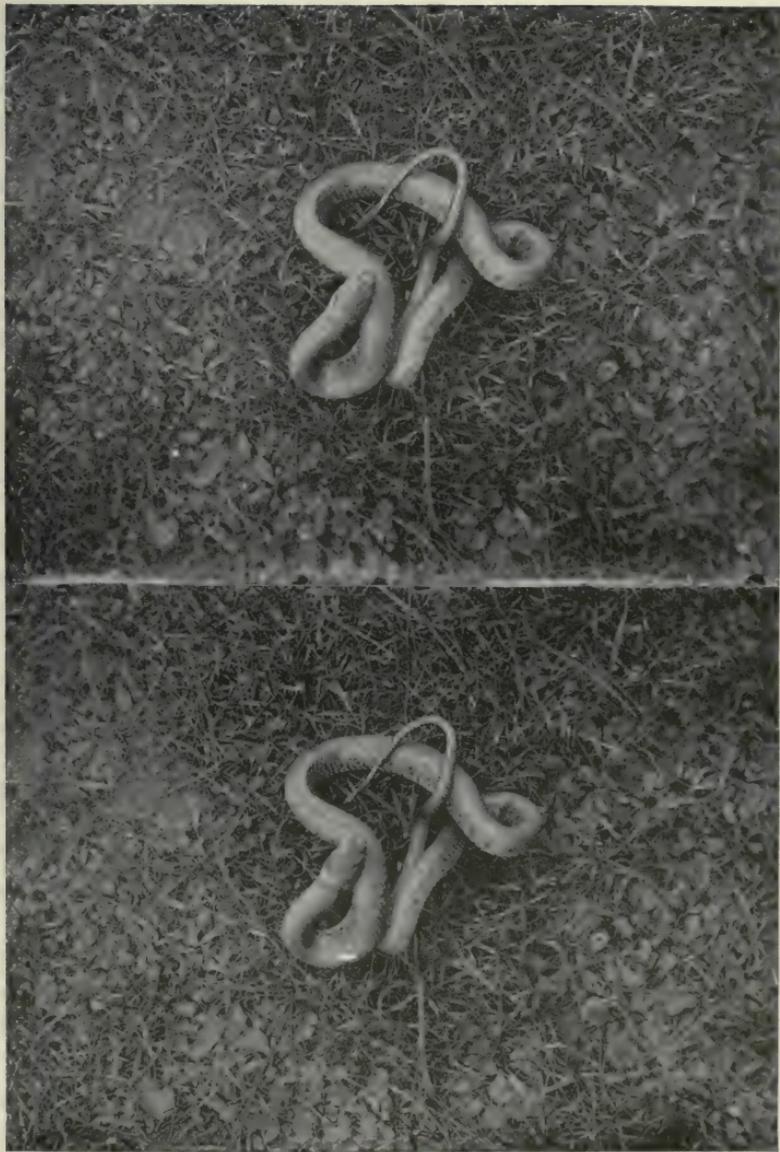
The Grass Snake, then, is quite harmless, but I have seen it killed many times under the mistaken impression that it was poisonous. It attains a length of about three feet, is greenish-yellow in colour, has a tail which tapers to a fine point, and

may at once be distinguished from the Adder by the absence of any dark markings, and also by its larger size.

The Adder can be identified by the V-shaped mark on the head and also by the dark zigzag line that runs from the head right down the centre of the back to the tail. It rarely exceeds eighteen inches in length, and is brown to black in colour.

Doubtless many of you have been interested in seeing the Snakes at the London Zoo and elsewhere, and observed the creatures thrusting out their forked tongues rapidly. Many persons mistake this for a "sting," whereas it is quite a harmless organ, and serves a far different purpose. The "stinging" process in a venomous Snake is carried out by means of two fangs situated in the upper jaw. These fangs point inwards, and are very sharp. The poison is secreted in a gland above the upper jaw, and when the Adder, for example, strikes a person, the venomous substance; or poison, is sent down a kind of little tube in the fang, and is then driven into the wound *caused by the fangs.*

The Grass Snake differs also from the Adder in its method of reproduction, for, whereas the former lays from twenty-four to forty-eight leathery-shelled eggs in a manure heap, and leaves them to be hatched by the warmth afforded, the female Adder hatches out her thin-shelled egg *in*



Grass Snake.

her own body, and thus produces her young alive. Thus naturalists term these two British reptiles oviparous and viviparous respectively.

Snakes, like Frogs and Toads, cast their skins regularly, and this is called "sloughing." The creatures wriggle about until they literally turn themselves inside out, as it were, and when an old skin is shed, the "bloom" on the new one is often very beautiful.

Not long since I watched the largest Boa Constrictor in Europe undergoing this sloughing operation, and when I tell you that the huge animal was kept in a room that adjoined my bedroom in a well-known fashionable watering-place on the Yorkshire coast, you may imagine I had good opportunities for studying my neighbour!

His companions in the room were many and various, for I remember there was a large Indian Python, some Frogs, Black Rats, Newts, several Birds, and other animals.

My friend, who owned this little Bedroom Zoo, handled all his pets without the slightest fear, and it was a rare sight to see the large Boa Constrictor twisting its massive form about my friend's body. Captured when only a few inches long, it had, when I saw it, grown to a length of many feet, and was so tame and apparently attached that it appeared to understand when it was fondled and even spoken to.

Leaving me in the room whilst going out to prepare a bath of water for the Boa Constrictor to lie in, so as to aid it in casting its skin, I must admit I felt somewhat nervous at being left alone with two huge Snakes crawling about me, but, having been assured by their owner that no harm would befall me, I stuck to my guns, and am alive to tell the story!

A day or two after this incident I watched the Boa Constrictor change its old skin, and I shall not readily forget the interesting proceeding, and the magnificent "bloom" upon the creature's body when it emerged triumphant from its sloughing operation.

I have very frequently heard the Dragon Fly described as "a horrid stinging creature." The truth is it does not and *cannot* sting. The same stupid blunder is made with respect to the Giant-tailed Wasp, a remarkable insect, the female possessing a long ovipositor which is more often than not mistaken for a "sting." The proboscis of some of our larger Hawk Moths is similarly spoken of. Then, again, some people have a horrid dread of handling, or even coming into contact with, various forms of wild life. I have known a big game hunter who would face a Lion or a Tiger with impunity, but who would not sit at a table the delicacies upon which had attracted the attention of a Wasp possessing a love for some sweet-

meat! I number among my friends, too, a nature lover who would think nothing of facing a Bull, but who for the life of him would refuse to handle a harmless Lizard! The mention of the latter reminds me that the Slow or Blind Worn is frequently mistaken for a Snake, whereas it is a legless Lizard, and completes the three upon the British list. Why it is called Slow and Blind I have long failed to contemplate, for it is not altogether slow, and it most certainly is not blind! Although, at first sight, the reptile may strike the observer as decidedly Snake-like in outward appearance, on examination rudimentary traces of feet may be noticed beneath the skin. It will also be observed by those who will take the trouble to study the Slow Worm that it possesses movable eyelids which at once distinguish it from the Snakes, and it may be that this accounts in a way for the name of *Blind* Worm. It attains a length of about fifteen inches, but ten inches may be given as the average. The colour is metallic red or grey upon the back; the belly is dirty white or somewhat darker.

The head is small, and if a specimen can be located and studied closely it will be seen that the tongue is not forked as in the Snakes, but notched. The food of this animal is made up of Snails and Worms. The slough is cast by this legless Lizard in the same manner as carried out by Snakes,

and I have found numbers of the old skins in the fields surrounding Whitstable, in Kent, a fine hunting-ground for this reptile and the Grass Snake.

The Slow Worm is a viviparous creature, producing its ten or twelve young in July.

On occasions, perhaps, the Slow Worm does not belie its name, and will lie motionless in a path. If thus seen and captured, the observer will have ocular demonstration of the creature's relationship to the Lizards, for it sometimes—though not invariably—happens that when the creature is handled by the tail a portion of that appendage will be snapped off in the characteristic manner carried out by many of the Lizards. This is, of course, resorted to as a means of escape.

On sandy commons one may hunt with certainty for the Common Lizard, a harmless, bright, merry little fellow which bodes harm to no man. I was keenly interested in watching a number of these Lizards on a large Sussex common not long since. Unless one is possessed of a certain amount of patience—a necessary trait in Natural History study—it is difficult to get a good sight of these remarkably active little reptiles. They scuttle through the herbage adroitly, and often quite noiselessly, but it is worth while spending some little time on the chance of observing one on an open patch, or, better still, to light upon a speci-

men on a bare piece of ground enjoying a sun-bath.

The present opportunity does not enable me to enlarge upon the subject of our reptile fauna, but perhaps sufficient has been written to attract attention to a more careful and intelligent study of these interesting animals, and if I have succeeded even thus far I have done well.



CHAPTER XI

WONDERS OF INSECT LIFE

I. INSECT LAMPLIGHTERS, ACROBATS, AND MUSICIANS

To deal with some of the inhabitants of the wonderful world of insect-life somewhat in the order set out in the title of this essay brings us at once to the Glow Worm of our English hedgerows. This particular insect seems somewhat ill-named, and in this respect reminds us of the so-called Slow Worm. Neither the insect nor the reptile is a Worm. As a matter of fact, the Glow Worm is a Beetle and the Slow Worm is a legless Lizard. *Lampyrus noctiluca* — our own familiar native species of Glow Worm — has doubtless been observed emitting her pale, soft light on a Summer's evening. The effect produced in a good Glow Worm year, when a number of females are gathered together, is a beautiful sight and very striking when the phenomenon is looked upon for the first time. I remember well a few years ago seeing a hedgerow lit up for some miles by the curious phosphorescent light, and neither

before nor since have I witnessed such remarkable insect lamplighting as on that occasion.

It is the female alone who possesses the power of emitting the light so closely associated with the life-history of this insect. It should be stated, however, that the grub is also luminous and feeds upon Snails. Whilst the female is wingless, a soft, flat, dull-black-coloured flexible creature, grub-like in appearance, the male possesses wings and wing-covers.

This is a nocturnal insect, and whilst the male takes wing—and sometimes portrays a couple of faintly luminous spots—the female remains in her hedgerow fastness, and by means of her lamplighting attracts the male insect to the spot where she remains secreted. The curious lamp carried by the female Glow Worm is borne upon patches of skin along the sides of the body. While it seems admitted that the light is undoubtedly an attraction and guiding signal for the male, much speculation is still rife as to the exact use of the phosphorescence possessed by this and other animals. The luminosity of insects in particular is imperfectly understood, and there is a wide field for research and observation in this respect that might well engage the attention of the young entomologist.

The eyes of the male insect are, it should be noted, well developed. Such being the case, it

appears easy to understand how it comes about that he is able to discern with tolerable easiness the habitat of the female.

While it has been suggested that the peculiar lamplighting may be the means of affording some amount of protection to the owner, it is not known with any degree of certainty how far this habit is extended or exactly in detail what objects are secured.

In some members of the same family of Beetles—the tropical species of South America, for example—the luminosity is very marked and striking. Although generally known as Fireflies, these tropical insects belong to the *Coleoptera*, or Beetles. To such a prominent extent is the lamplighting carried out that these tropical insects have been referred to as “Railway Beetles.” The grub-like female is said to exhibit, according to Professor Ainsworth Davis, “a ‘danger-signal’ at either end, and a row of ‘caution-signals’ along each side, or, to speak less metaphorically, possesses luminous organs in the positions indicated which respectively emit red and green light.”

While the British species is stated to have the power of increasing, diminishing, or extinguishing the light carried by the female, in the tropical kinds the manner of its control is unknown. The subject bristles with speculation and difficulty;



Tongue of Blow Fly



Foot of Ichneumon Fly.



Foot of Blow Fly.

for, whilst in some species the female is the chief and indeed only lamplighter of the two, in some insects included in the same family as the Glow Worms the light-giving power is most strongly developed in the males! In this case one would expect that the eyes of the female would, as a natural consequence, be more prominent than those of her mate, but this is not so!

Writing of Beetles reminds me that at a meeting of the Linnean Society held to commemorate the fiftieth anniversary of the joint reading of the historic papers "On the Tendency of Species to Form Varieties, and on the Perpetuation of Varieties and Species by Natural Means of Selection," by Charles Darwin and Dr. Alfred Russel Wallace, the latter, with that modesty and chivalrous spirit that he possesses, told us how both he and Darwin became in early life ardent Beetle hunters. As all the world knows, however, these famous naturalists did not hunt Beetles only, but evinced an intense interest in the variety of living things. To quote Dr. Wallace's own words, "There was no other group of organisms that so impressed the collector by the almost infinite number of its specific forms, and their innumerable adaptations to diverse environments. It was this superficial and almost childlike interest in the outward forms of living things which happened to be the only one that

could have led us to a solution of the problem of species. It was the constant search for, and detection of, often unexpected difference between very similar creatures that gave such an intellectual charm and fascination to mere collecting, and when, as with Darwin and myself, the collectors were of a speculative turn of mind, they were constantly led to think on the why and the how of this overwhelming and at first sight purposeless wealth of specific forms among the very humblest forms of life."

It is important to remember these words from one of Darwin's few living friends. They made, it will be noted, a small beginning. They became systematic collectors. What they collected interested them. They were amazed at the diverse forms of structure and of external difference. They were led on little by little, bit by bit. Then, later, they became intelligent observers, travellers, and explorers, and, as every one knows now, they are numbered among the greatest of all ages as exponents of the wonderful law of evolution.

I want to impress upon the ardent young naturalist that both these famous men made small beginnings and among humble creatures. They loved animals and plants, but they did not stop at loving them. They cared for and industriously studied them, and the subjects upon which they concentrated their attentions were to

be numbered among the most humble forms of animal life. Whilst in Darwin's case his theory was the result of many years' laborious work, in the case of Wallace—still happily among us—the thought came to him in a flash as it were, without warning. So it comes about in all things pertaining to Nature. One never knows, however modest the zealous worker may be, when or how some broken chain may be riveted together as the result of individual observation and research, and each intelligent and painstaking student may some day be of inestimable service in helping to piece together some part in Nature's story previously incomplete.

To resume our story of the Glow Worm, the larvæ do not attain the adult state until the first year's birthday has been passed. They are not only interesting but useful creatures, and should be much encouraged. Their food consists, as has been mentioned in passing, of Snails, and for these they appear to possess a veritable passion. Closely examined, the larva is a remarkable little animal, having upon the abdomen a kind of brush-like apparatus, by means of which not only is the power of locomotion effected, but, through its agency, the slime from the Snails with which it is brought into contact is cleansed from the larva's body. The luminosity of many other kinds of animals might well occupy attention, and the

reader will remember the controversy which raged not long since with regard to our feathered friends the Owls. Enough has been written, however, to attract notice to this interesting branch of Natural History, and we must pass on.

Of acrobats and musicians in the world of insect-life we have several common and interesting examples. Some come under the double heading, and in this respect we may mention the Grasshoppers and the Crickets. Others, again, such as the Frog Hopper, the Flea, the Water Boatman, the Skipjacks, and the Devil's Coach Horse Beetle, are acrobats only, and further ones, such as the Humble and Honey Bees, the Blow Fly, the Dor Beetle, and the Cockchafer, are musicians alone, and do not perform any special acrobatic feats.

We will take the acrobats and musicians first, and this brings us at once to the Grasshoppers. Two species may be mentioned, namely, the Great Green and the Common species. The long antennæ and the much larger size at once distinguish the former species. It claims kinship with the Long-horned group, the common little Grasshopper of our meadows and lanes belonging to the Short-horned group, which includes the true Locusts. The Great Green species should be sought for in trees and bushes. It is not terrestrial like the smaller and more common kind. It

is a large insect—indeed one of the largest Grasshoppers known.

Of the wonderful leaping powers of both the large Green Grasshopper and the smaller one little need be said, nor of the pleasant rural sound emitted by both of them. Whilst to many persons' ears the chirp of the Grasshopper and the Cricket is perhaps the reverse of pleasant and by no means musical, I always regard the stridulating noise as lending welcome variety to the sounds of the countryside. The noise made is certainly fit to be regarded as coming under the heading of insect music, and we do not in any case look to these creatures to provide us with the same entertainment as our bird friends.

The powers of movement possessed by some of the large Grasshoppers, and even the little Frog Hopper, are very remarkable, as all those who have witnessed their acrobatic performances must admit. An exotic Grasshopper from Brazil, which I once found hopping about a road close to my house, performed some wonderful feats, sending its large body through the air a distance of several feet. Whence this strange visitor came has always been a great mystery to me. The insect belonged to the species known as *Agroecia vittipes*, and it was the first occurrence of its kind in this country.

The House and Field Crickets, as almost every

one knows, are both acrobats and musicians. Try to catch one engaged in the former pursuit and the reader will soon have ocular demonstration of the insect's powers of progression, especially if the weather be scorching hot. The Field and the House Crickets are readily distinguished, the former being black in colour, while the latter is paler and possesses brownish markings on the wing-covers. The House Cricket, too, has some black markings on the head and beady black eyes. The hind legs—like those of the Grasshoppers—are large and long, and I have noticed with interest recently a somewhat general analogy between these and the legs of the Rabbit. The hind legs of the latter are so placed and seem so constructed, and of such a length as compared with the fore ones, as to enable the rodent to leap with adroitness, and in the case of the Hare the long hind legs aid the animal considerably in its swift travels uphill and the sidelong leaps that it unexpectedly takes.

The House Cricket inhabits for the most part warm places indoors, but the Field Cricket tenants grassy spots where it can burrow to its heart's content, and may be sought for during the Summer in hot, sandy districts. The latter species is much rarer than its commoner relative. The male is the musician, and possesses a musical file wherewith to produce the sound known to most

people. An examination of this instrument will reveal what a wonderful apparatus it is. This stridulating file is present under each fore wing, and the sibilous music is produced—in a similar way to the Grasshoppers—by the insect scraping the rows of pegs (of which the file will be seen to be made up) on the inner edge of the hind thighs over the acute edge of the nervures of the fore wings.

It is a lesson in the wing structure of insects to closely observe even a common House Cricket fold up its wings. It will be seen, when the insect is thus examined, that the anal area lies flat over the body, whilst the remaining portion of the wing, when at rest, is turned downwards at the side of the creature in a most wonderful and ingenious manner. A mere written description cannot convey any idea to the reader of this wing structure in such a common insect inhabitant of our country, and personal observation alone can convince the uninitiated of the truthfulness of my remarks.

The Frog Hopper is at all times a curious little creature, when seen either embedded as a soft greenish insect in the frothy substance that it exudes—apparently for protective purposes—or when it has fully developed as a hard, brownish-grey creature springing adroitly, when touched, a distance of several feet. It seems extraordinary

that such a common insect should, as a matter of fact, be so little known and understood. Few people, indeed, appear to know it by its proper name, to say nothing of its life and history. In what we are still apt to call "the good old days," the froth in which the larva of the Frog Hopper lives was thought to be the saliva of our perennial friend the Cuckoo. Thus it comes about that the insect also goes by the name of Cuckoo Spit. The larva may be distinguished from the pupa by the absence of rudimentary wings. Once having freed itself from the froth, or the latter having dried up (I know not which happens exactly), the Frog Hopper soon hardens and becomes quite a gay little sprite. Previously we had known him as a very soft greenish-yellow creature, incapable of any great movement; now he has changed very quickly into a hard little mite, brown and grey in colour. Search for him along the countryside among the grasses, or in the garden upon the rose bushes when he is in the adult stage. You will need the practised eye even then, for he is difficult to locate. Having found him, just touch him, and without any preparation away springs the little wanderer, a distinct "snap" accompanying the performance. He has long hind legs admirably suited for hopping, or jumping, or leaping, or whatever other form of acrobatics one chooses to call his feats.

I have these insects in plenty upon my rose trees, but I have never been able to detect any harm perpetrated, nor indeed of what their food consists. The poverty of our knowledge regarding some kinds of animals is very marked, and is a direct contradiction to those so-called wiseacres who tell us that all that it is possible to learn of wild Nature's ways has been learned and the book may be sealed. Such people know not Nature, or, knowing, have misinterpreted her. To the young naturalist one may safely say there is not one single animal or plant the full life-history of which is yet known to us, not one which, in the words of Lord Avebury, would not pay, repay, and overpay not merely the study of a day, or a month, or a year, but the devotion of a lifetime.

The drowsy hum of the Cockchafer; the buzz of the Blow Fly; the delightful monotone of the Honey Bees among the Limes in July as the industrious insects are engaged in their pillage among the sweet-scented and honey-laden flowers; the fussy, bustling body and noisy hum of the Humble Bee; the dancing in the Winter air of frail little Gnats, whom one would imagine arctic weather would exterminate; the fluttering flight of Butterflies and hovering of Hawk Moths—these and many other points concerning these humble insect folk might well occupy our attention. If, however, our brief survey of a few

forms of life coming under the heading of "Insect Lamplighters, Acrobats, and Musicians," results in some indifferent observer being attracted to an intelligent study of even a few of them, we shall be deeply grateful.

II. SUMMER'S INSECT DANDY AND OTHERS

It is a scorching hot Summer's day. We are seated near a sequestered pool, the banks of which are fringed with various aquatic rushes. Among these latter a search will reveal the beautiful blue of the true Forget-me-not, the Brooklime, Watercress, strong-smelling Water Mint, and other plants too numerous to mention. Swallows are continually skimming over the surface fly-catching; a Sedge Warbler has her brood in one of the low bushes on the far side of the pool, and the male bird is uttering notes of vehemence and defiance as we approach too near to his home-stead. A Water Vole peeps out of his hiding place in the reeds, and a timorous Moorhen leads her black babies across the pool, leaving behind divergent lines of silver. Having rested awhile, let us explore this cool retreat, for within and without it is peopled by a host of interesting creatures if only we use our eyes and ears aright. We find, on closer acquaintance with the water,



DRAGON FLY, Great Water Plantain (on left), Rushes,
and Water Crowfoot.



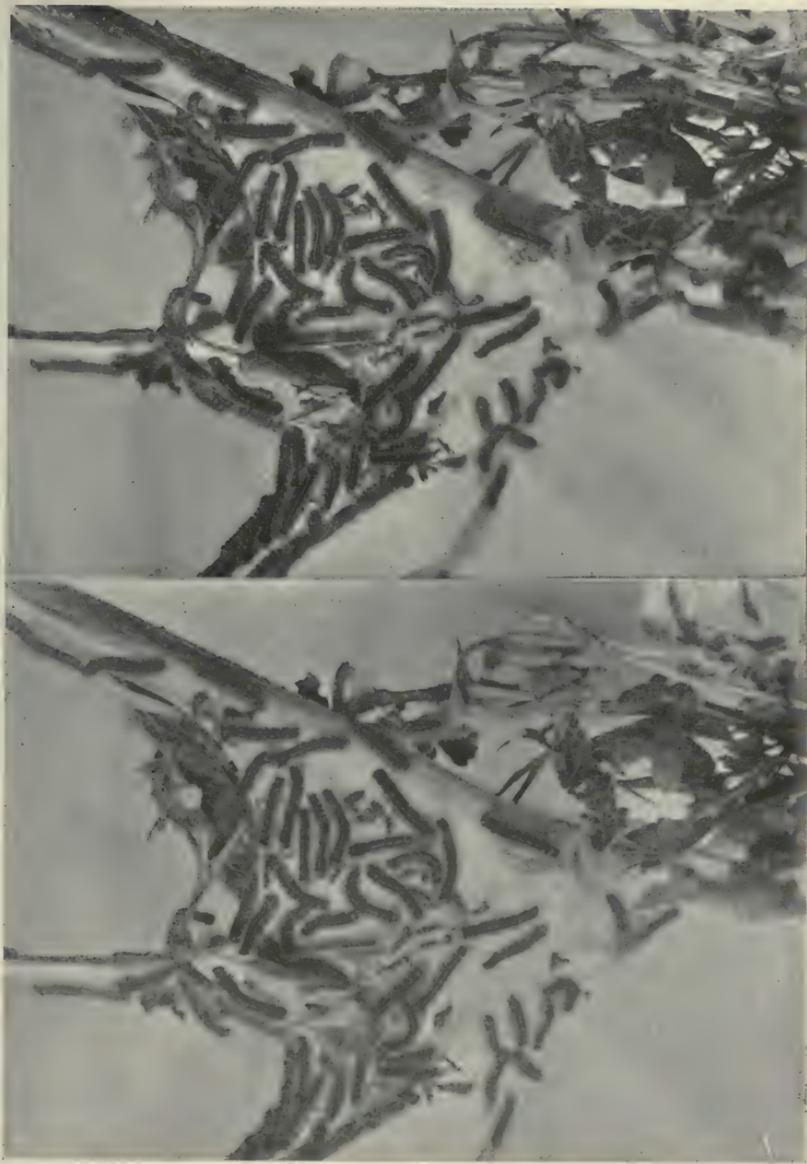
that the Dragon Fly, aptly named Summer's insect dandy, is holding high revel, and the hours pass swiftly and pleasantly as we observe the coquettish movements of the numerous specimens which appear, disappear, and reappear before us.

What are the creatures doing here? What reason can be ascribed for the curious antics they carry out, their bodies bobbing up and down like so many airy beings suspended by an unseen wire? 'Tis a remarkable sight, to say the least, and one might imagine when witnessing it for the first time that the Dragon Flies were in a half-frenzied state, or had suddenly lost their reason. When we come to consider the life-history of Summer's insect dandy, however, we cannot fail to recognise that he is far from being ill-witted, or without reason, as we shall presently see.

The insects before us then are mating upon the wing, flying hither and thither, and exhibiting a wonderful control over their flight powers as they suddenly pull themselves up, then hover, now bob up and down. What means this latter movement? It is carried out by the female, and she resorts to this curious habit for the purpose of selecting a suitable place in which to deposit her eggs. Having satisfied herself that a convenient place has been found, she drops the end of her body into the water and lays her eggs. This accomplished, away she flies on unerring wings,

striking out powerfully and pursuing and capturing smaller insect denizens of the air.

Some Dragon Flies crawl down aquatic plants into the water, and lay their eggs on the bed of the pool. These most interesting insects do not undergo a complete "metamorphosis," for both the larval and nymphal stages are passed under water. When the egg hatches the larva will be found to be possessed of more prominent feelers than the adult insect, the legs are more adapted for walking, the hind portion of the body is broader and shorter, and, more remarkable still, the larva has a sort of insect-catching trap, which should be seen in operation to be rightly appreciated. This wonderful contrivance, by the aid of which the Dragon Fly larva secures its prey, can be snugly tucked away beneath the head when not in use, and the creature is considerably aided in its pursuit and capture of small water-animals by the possession of a pair of strong, curved hooks with teeth. The trap—called the "mask"—is suddenly shot out with great precision when some aquatic creature is being pursued, and the curved hooks secure the unwary victim. The larva is a voracious feeder and grows apace. Eventually the time comes when the water-home is vacated, and in the Summer-time the young insect hunter should carefully search the herbage round a pond or river for the pupa. He will have



Larvae of Lackey Moth.

to search diligently, however, for the creature closely resembles its environment.

Once having located it, do not be in a hurry—just wait and watch. It will then be observed that a remarkable transformation scene is being enacted before one's very eyes. As the structure hardens in the strong sunlight, suddenly the case containing the perfect form splits asunder down the back, and little by little the insect frees itself from its old covering. It will be seen to rest awhile. There is no immediate hurry, no undue excitement. The moist, limp-like wings are spread out to dry and harden. This accomplished, and the creature having entirely escaped from its imprisonment, it is ready for flight, and away it goes upon its first journey in the air, leaving its old body-covering adhering to the plant selected as a resting place during its remarkable pilgrimage.

The Great Dragon Fly has an expanse of about four inches, and a body that measures about three inches in length. It is light rusty-brown in colour, marked with paler colours. The wings are of beautiful texture, but a photograph can, after all, convey but a poor impression of their delicacy. To be seen to advantage they should be examined under a good magnifying glass or microscope. The transparent wings, the rich colouration of the bodies of some species (such as

the little Demoiselle), and the strong flight, stamp the Dragon Fly, not only as one of Summer's choicest insect dandies, but as one of our most beautiful and interesting native insects.

When upon the wing one cannot fail to be amazed at its adroitness and power. It proceeds backwards and forwards in a wonderful way; indeed, owing to its rapidity and ease of flight, its considerable powers of endurance and its predatory habits, it has acquired the name of Insect Falcon, as well as the Eagle among insects. The Great Dragon Fly possesses large compound eyes, but some kinds of animals possess simple eyes; others do not have any visionary powers at all. These latter are animals which live under conditions where eyes are useless, and their organs of sight have been lost by degeneration. Again, there are many animals that have no eyes, nor have their ancestors ever possessed any. Insects, however, and also Crustaceans, have eyes of a peculiar kind known as compound eyes, and beyond this most insects have smaller simple eyes.

The head of the Dragon Fly is composed for two-thirds or more of two large compound eyes, and if these be examined it will be seen that the outer surface of these two eyes is made up of a number of small spaces or facets. These are the outer lenses of the many eye elements which go to complete the whole eye. Before we pass on to

consider some other insect companions of this insect dandy, it should be stated with emphasis that Dragon Flies (stupidly called Horse Stingers in some country districts) do not sting, because they have no sting wherewith to do so. Many of these old-time fallacies and superstitions are still rife in country places, but it is reasonable to hope, now that more attention is being paid to the true life-history of animals and plants, that the position they occupy in the great world of life will be better understood than heretofore.

The Caddis Fly I always recognise and remember as one of my earliest insect friends. I was much impressed in my younger days with the remarkable larval and pupal case that the larva constructs, and wondered a thousand times how it was possible for such a creature to construct such a home. The case is sometimes built up of small sticks, and is embellished with a small shell, a stone, or some similar object. Other cases are composed of small stones, and adhering to these the tenanted shells of minute forms of shell-fish may be found. It is no uncommon sight to witness the larva of the Caddis Fly travelling in one direction and the molluscs endeavouring to progress in an opposite one!

Having passed the larval condition in the case and eaten until it feels the days for fasting have at last arrived, the larva decides to close the

front door, so to speak, and retire from business. The entrance to the portal having been securely fastened up, the creature feeds no more, but undergoes a remarkable change. In course of time, the fat, yellowish larva changes its appearance, until eventually it is almost unrecognisable. If a case be broken open the soft body of the miniature insect may be observed, and the wings can be plainly seen. There is no hurry. Everything in the life-cycle of the Caddis Fly proceeds systematically and in order. At last the time arrives when the secret shall be revealed, when the inner working of the little slumberer within can be seen to perfection. The case is split asunder, the adult Caddis Fly creeps forth, leaves its watery home, and climbs up an obliging reed-stem or other aquatic plant. There it rests. Its wings are spread out in a similar manner to those of the Dragon Fly to dry and harden, and by and by the insect essays forth upon its initial journey in the air, and pursues its pilgrimage on and around the water where its lifetime began and will as surely end. Unlike the Dragon Fly, the Caddis Fly does not leave its old home, but spends its remaining days as a perfect insect in its immediate vicinity.

This brings us to another vastly interesting insect inhabitant of the pool we are exploring. The Great Brown Water Beetle is one of the

largest members of the British Coleoptera, and is a great favourite among those possessing an aquarium. The young naturalist, however, must be careful, for *Dytiscus Marginalis* is a cannibal, and has distinct carnivorous habits. It has, in fact, been aptly termed the Crocodile of insect life. It preys upon almost everything within reach of its powerful mandibles, and strikes terror wherever it chooses to roam. It is well protected in its armour of olive-brown mail, bordered with yellow; it swims and dives with amazing swiftness, and carries down with it into the limpid depths a supply of air beneath the wing covers. Then, when the supply is exhausted, it rises to the surface and breathes again. Perchance the insect will dive once more and pursue another unwary victim, or, it may suddenly decide to go on a foraging expedition and explore another sheet of water some little distance away.

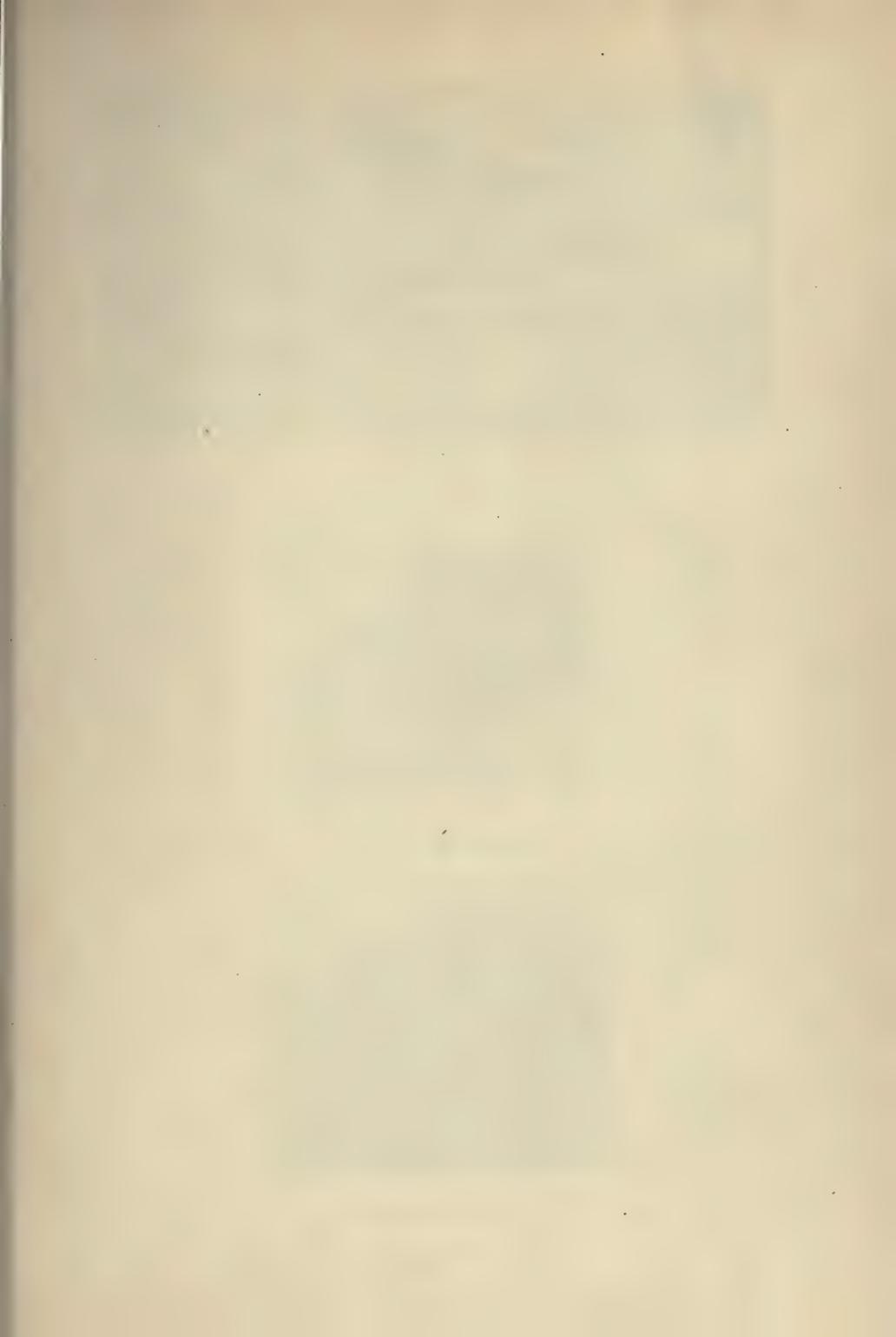
This species resorts to stagnant water, and when it flies from one pond to another it carries upon its body on occasions the seeds and eggs of various aquatic plants and animals, and thus aids in their distribution. The flattened posterior legs are long, and are fringed with hairs, and by this means the Beetle is able to use them as a pair of strong oars.

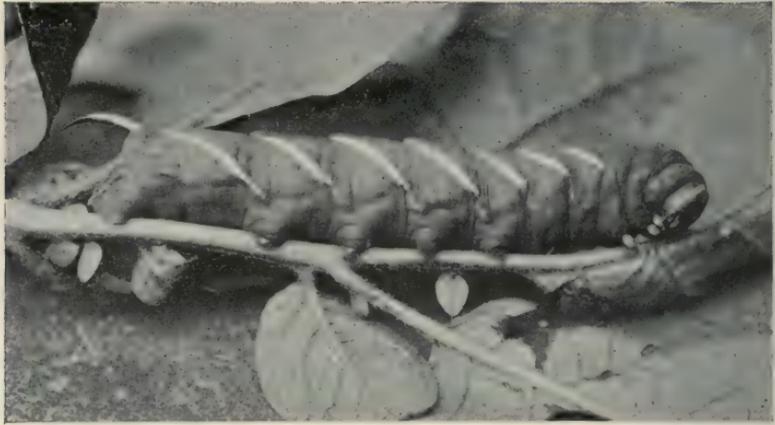
The larva of this insect is a somewhat gruesome-looking creature. It has a strong, fleshy body,

and is armed with very powerful and large jaws. These latter are long and incurved. A careful search around any stagnant pool should successfully reveal the larva of this Beetle suspended in the water, with the tail just protruding above the surface. It will be observed that the creature hangs head downwards. Why is this? the reader may well ask. Because it breathes through its tail! In this position then it rests, waiting a favourable opportunity to dash down upon its prey. Suddenly, and without any warning, the larva distends its monstrous mouth as some animal inhabitant of the pool comes within reach, the strong jaws close, the juice is sucked from the captive's body, and the remnant of its former self is rejected and permitted to go free.

Time is far too short to explore the abundance of insect life even in and around the little pool to which we have made a pilgrimage, and if we merely take note of the denizens on the surface of the water and inhabiting the surrounding herbage we shall find our time fully occupied. If we are desirous of scooping out a handful of water and examining the numerous forms of life found in a tumblerful, then we must pay many more visits to our little pool, and learn something fresh and interesting each time we venture forth.

The Whirligig Beetles and the Pond Skaters will be found playing high jinks; the Water Boat-





Larva on Potato Leaves.



Commencing to Bury.



Almost Disappeared.

LARVA OF DEATH'S HEAD HAWK MOTH.

man will be seen carrying out a series of ludicrous but clever manœuvres, and a careful look-out should be kept for the Water Scorpion. This insect is related to the large Water Bugs, and belongs to the Nepidæ.

There are only two kinds of Water Scorpions upon the British list, and they may be recognised by the long tail processes which serve the purpose of a breathing organ. The feet are what is known as one-segmented, and the middle and hind pairs bear upon them two claws. The front pair of legs are clawless, but are nevertheless curved and sharp. The strong fore legs are modified for the purpose of securing prey, the food of the Scorpion consisting of small aquatic creatures. One British species has a broad and flat body, while the other possesses a very long and narrow one. The former is brownish above and red underneath, whilst the latter is yellowish brown.

As we wend our way homewards through the meadow we disturb the Frogs and a stray Coot who has forsaken her reed-laden retreat by the pool to seek after a fresh food supply. The Sedge Warbler is still chattering in the osier-bed, and, as we approach the barren country bordering a wood, the curious vibrating warble of the Nightjar strikes curiously upon the ear of the wanderer. Presently, one of the birds comes into view, but it is difficult to follow it in the gloaming hour. It

appears as a giant sombre-clad Swallow, darting ever and anon at some Cockchafer or Moth, and bringing its broad wings right over its back and producing, as they strike together, a noise like a pistol shot.

Now we have reached the meadowland, and as we stoop down to explore the herbage we find the Crane Fly, or Daddy Longlegs, dexterously threading her way, by means of her long legs, through the grasses. This is one of the most interesting insect inhabitants of the countryside. If the reader has never witnessed a female Crane Fly engaged in the act of egg-laying he has a pleasant and entertaining sight in store. The wary creature propels her airy form up and down above the grasses until she finally selects a suitable place wherein to deposit her treasures. The insect possesses a long, tapering body, mazy wings, long legs, and antennæ. The female has, in addition, an ovipositor situate upon the extremity of her body.

An enormous number of eggs are laid, and these remain throughout the Winter in the soft ground where they are deposited. In the Spring they hatch out, and the hard grubs—called Leather Jackets because of their tough character—soon begin to eat up the surrounding grass roots. In meadow and pasture lands much harm is thus committed, but various kinds of feathered folk,

such as Starlings, Rooks, Jackdaws, and others, prey upon them and thus help to very considerably reduce their numbers.

The adult Crane Fly is dull brown in colour, and, while the head is comparatively small, the eyes are large.



CHAPTER XII

THE YOUNG NATURALIST BY THE SEASHORE

THE young naturalist should not, of course, restrict his stalking to inland districts if he lives in the neighbourhood of the seashore, or is fortunate enough to spend a holiday at the seaside, for he will then find a new world of animal and vegetable life wonderful to behold.

So many people go to the seaside nowadays that it is really astonishing how few of the number think fit to gain some interesting information as to the sea and its unlimited wonders, and the character of the district visited. It is true enough that many young people delight in catching Crabs, Shrimps, and other marine creatures, but few there be who go to the silver sea determined to return from their sojourn with some knowledge of the fauna and flora to be found there.

Nobody looks forward more than I do once a year to a holiday at the seaside, but I must admit that I anticipate with as much pleasure the animals I shall be fortunate enough in stalking, and the plants and trees observed, as the holiday and the surroundings. I always make a point wherever I go, and have done so for a number of

years now, of making out a list of the Mammals, Birds, Reptiles, Fishes, Crustaceans, Insects, etc., that come under my notice, and the wild plants and trees that are observed. I would point out, too, that I do not compile a sort of haphazard, leisurely list, waiting as it were for something to turn up or chancing to luck, for I go a-stalking and a-walking, and from the moment I set foot in a new district until I leave my great desire is to compile as comprehensive a list as I can during a restricted holiday.

Those of you who have read *The Boy's Own Nature Book* will remember I there told the story of how I spent two country holidays, and I hope some of you have been smitten with the ideas there expressed.

It is really astonishing what may be seen if one is observant and determined to succeed, and directly you commence to make your list out you will find that there is no need to call enthusiasm to your aid as it follows in consequence of your delightful quest, and instead of finding the time hang heavily on your hands you will, if your experience be similar to mine, realise that the holiday is all too short for you to accomplish all you had planned out.

When you alight at the station, indeed even before that, and whilst you are still in the train, the work begins, for some animal or plant will be

noticed which must be jotted down in your list. Put down notes concerning all the common things—Sparrows, Rooks, Gulls, Mice, Rats, Flies, Earwigs, Sand Hoppers, Crabs, Winkles, Starfish, Jellyfish, Cockles, Mussels, Barnacles, Whelks, and so on. Do not omit, too, the common plants, for these will largely help to swell your list to unexpected numbers, and accord a place to the Groundsel, Daisy, Dandelion, Shepherd's Purse, Poppy, Scabious, Rest Harrow, Knot Grass, Sun Spurge, and numbers of other common plants that need not be detailed.

At the conclusion of your holiday, and when your lists are as complete as it has been possible to make them in the limited time at disposal, get out a sort of analysis and generally sum up the situation, as it were. Then you should be able, if you have done your work right, to tell what are the commonest animals and plants of the district, where they mostly occurred, and have jotted down in your notebook various other details of lasting interest.

When you return home, enter your hurriedly written notes in a good strong memorandum book or Nature Diary, and then you will have preserved the records which caused you so much pleasure and profit in making.

Some day you may be asked by another Nature lover if you have ever visited a certain seaside

resort, or some other district, and if you have, and have carried out the suggestions given, you will be able to turn up your notebook and afford information that will be of service to your friend, and show him that when you were on your holidays you occupied the time to advantage.

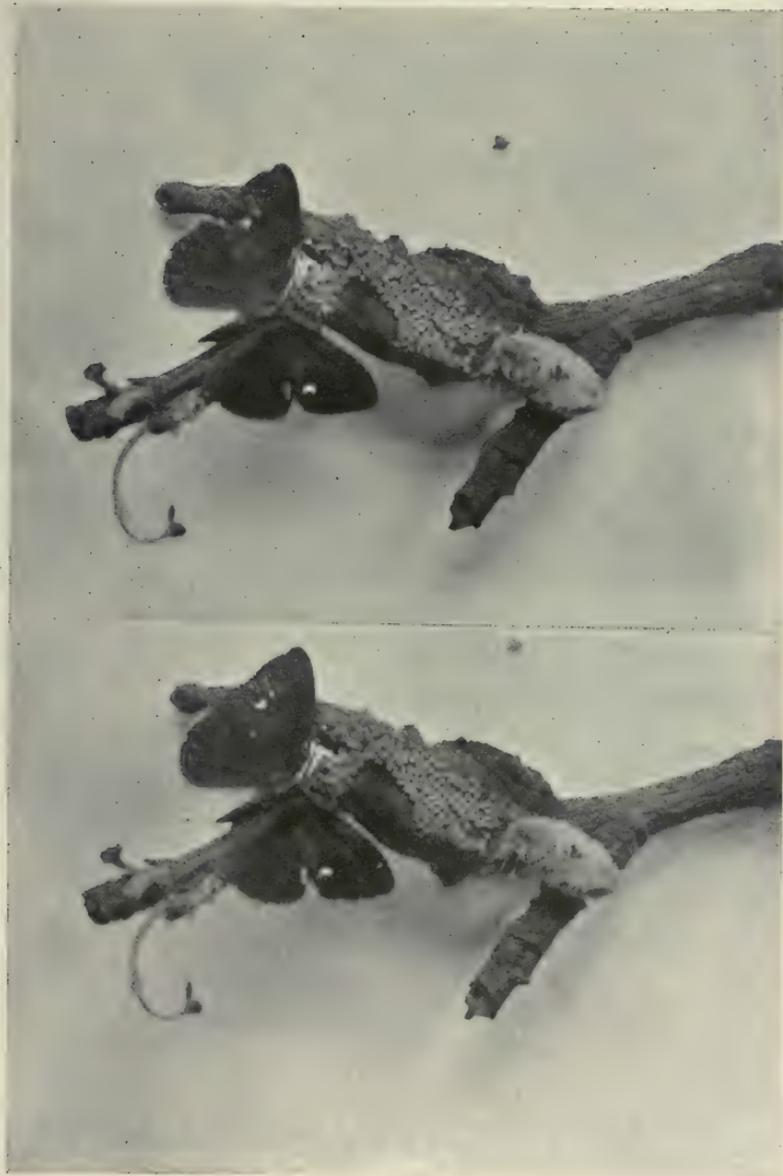
It is a good plan to alter your stalking ground so as to strike acquaintance with a new set of animals and plants, for it is remarkable to notice how the fauna and flora of our country varies. A mile or two, and often less, brings you on a different stratum, or soil, and with the change the animals and plants vary tremendously. One day you can restrict your operations to the shore itself, within sight and sound of the ever-murmuring sea; another day you may climb the cliffs and note the wild folk astir there; the next may be spent at the summit, and a long walk taken right along the top of the cliffs; another excursion may be devoted to some moorland or hillside, and another time you can strike inland to some country lane or meadow, stream, pond, wood, or sequestered valley. Find out the nearest villages and hamlets, and visit them. Ascertain any interesting information concerning them. Seek out the church, and any other historic buildings, and learn what you can of their history and associations.

You will then return to the vicinity of the sea

with renewed interest and pleasure, and find perchance that in your absence a storm has cast upon the shore animals and debris well worth examination, or that some migratory birds have arrived to which attention may be directed.

It must not be imagined that I advise you to give up your sports and games and amusements. That, to say the least, would be debarring you from enjoying your holiday to the full, but you will be able to map out your plans in such a way that attention may be given to both the serious and the light sides of your sojourn, and wherever you go I wish you a happy and a profitable holiday.





Vapourer Moth, Male, Wingless Female, and Eggs
on Pupa Case.

CHAPTER XIII

PLANTS AND TREES WORTH KNOWING

It is not intended to make this a dry-as-dust chapter on Botany, but to give some notes upon plants and trees worth knowing that will be of some service to those young people who are desirous of learning the names, uses, etc., of some of our British plants and trees.

From a scientific point of view, of course, all plants and trees are worth observing, from the humblest weed on the rubbish heap to the tallest monarch of the forest, but it is not altogether from that point of view that it is proposed to approach the present part of our story.

There are several plants and trees of economic value to mankind, and many of these are not nearly so well known to-day as they might be, for our grandfathers and great grandfathers used herbs and other plants far more than we do, and resorted much more to Nature's own remedies to cure several of the ills that the flesh is heir to.

There are other plants and trees worth knowing, not so much because of their economic value, as for the fact that some part of them is poisonous, and it is just as well for the Nature stalker—and the Boy Scout and camper-out in particular—

to be acquainted with these often alluring but forbidden vegetables.

It would be quite impossible in one short chapter to set out in detail even the general characteristics of the plants and trees that I should like the lover of the outdoor world to know, for whole books have been devoted to the subject without in any way exhausting it. It will, therefore, be my aim to point out the names and a few other particulars of a selection of trees and plants worth knowing, and the reader must of his own accord follow up the matter and learn to become acquainted with them.

It is unnecessary in this book to emphasise the value of trees and plants generally, for that has already been drawn attention to in *Every Boy's Book of British Natural History* and elsewhere, beyond which it is well known to all intelligent people that trees and plants are of inestimable service in supplying us with purified air in the form of oxygen, as well as food, medicine, raiment, timber, shelter, consolidation of the soil, etc., and, of course, afford us pleasure by reason of their beauty of form, colour, or scent.

We may now map out three lists of British Trees and Plants which may prove of service, the first being devoted to what we may call Useful Plants, the second list to Useful Trees, and the third list to Poisonous Plants.

I. USEFUL PLANTS

Name of Plant.	Uses.
1. BILBERRY . . .	Fruit useful for stewing purposes.
2. BRAMBLE . . .	Fruit (Blackberries) very wholesome and sweet; useful for puddings, jam, and jelly.
3. CENTAURY . . .	Juice extracted from flowers, when dried and then boiled, makes a splendid tonic and is of great use in creating an appetite!
4. CHAMOMILE . . .	A fine tonic; flowers used in fomentations.
5. CHICORY (or SUCCORY)	Roots of medicinal value and are also ground, roasted, and mixed with coffee.
6. COWSLIP . . .	Juice from flowers, when fresh gathered, makes wholesome wine.
7. DANDELION . . .	Roots of medicinal value; leaves make salad; flowers used to make wine.
8. FUNGI . . .	There are several species edible, but great care must be exercised in choosing same.
9. HEMLOCK . . .	Fruit poisonous, but is of service in certain diseases.
10. HENBANE . . .	Poisonous, but valuable as medicine for producing sleep.
11. MARJORAM . . .	A useful sweet-scented plant for seasoning.
12. PEPPERMINT . . .	Yields a stimulating and fragrant oil.
13. STINGING NETTLE . . .	Leaves, when young, used by country people to make Nettle Tea and Nettle Beer.
14. WILD STRAWBERRY . . .	Fruit small, but luscious.
15. WILD THYME . . .	Leaves useful for seasoning.
16. WOOD SORREL . . .	Juice will remove ink-spots and is sold as "Salts of Lemon."

Name of Plant.	Uses.
17. WORMWOOD . . .	Juice obtained from leaves, when boiled, useful as a pick-me-up and should be taken like quinine.

Note.—Any of the above plants mentioned as poisonous, but useful medicinally, should not be used without advice from a competent person.

II. USEFUL TREES

Name of Tree.	Uses.
1. ALDER . . .	Although wood is soft and quickly decays, this tree is useful because of durability in water or under ground.
2. ASH . . .	Wood hard, tough, and yet elastic. Largely used for Hop poles in Kent and other Hopfields, also for hurdle making.
3. BEECH . . .	Wood fine grained, but brittle and not very strong; easy to work where turnery is employed.
4. BLACKTHORN . . .	Yields a fruit known as Sloe useful for making into wine, and branches make very strong walking-sticks and an effective weapon of defence.
5. BOX . . .	Wood very hard and close grained; useful for engraving blocks, etc.
6. CHERRY . . .	Provides a luscious fruit; wood largely used for making pipes, cabinets, and musical instruments.
7. CRAB APPLE . . .	Yields small apples.
8. ELDER . . .	Wine may be made from the purple berries, and is very serviceable, taken hot, for coughs and colds. Flowers yield a volatile oil by distilling, and is then used for poultices, etc.

Name of Tree.	Uses.
9. ELM . . .	Wood very hard and tenacious, useful for underground work and in water, such as making a dam, locks, sea-groins, flood-gates, etc.
10. HOLLY . . .	Yields a beautiful hard, white wood which is used for cabinet making, etc. Berries afford food for birds and decorative purposes.
11. HORNBEAM . . .	A hard, white, close-grained wood, useful for making broom, rake, spade, and fork handles, etc.
12. LIME . . .	This beautiful sweet-scented tree yields a splendid honey to Bees; bark is made into ropes and mats; wood soft and light, white in colour, and useful for working into articles where a soft, light wood is essential.
13. MAPLE . . .	A firm, fine-grained wood, browning with age.
14. NUT HAZEL . . .	Provides sweet nuts relished by mankind and many wild creatures. Grows very clean and straight, and is thus largely used for walking sticks.
15. OAK . . .	Fruit, known as acorns, useful for feeding Pigs, Squirrels, etc. Articles of furniture when made of this wood become very valuable with age, darkening in colour, and are much sought after by connoisseurs. Bark largely used for tanning and as cork; wood very durable for fences and doors. Our old British men-of-war were largely built of this venerable tree; the wood is so durable that it suggested to the composer of the well-known song,

Name of Tree.	Uses.
	“Hearts of Oak,” the expression, “Hearts of Oak are our Ships.”
16. OSIER	This useful tree is cultivated in swampy localities because of its service for basket making. The trees are cut down periodically so that new young growth may appear, which eventually becomes of great commercial value.
17. POPLAR	Wood light, spongy, but durable; useful for scaffold poles, planks, rafts, etc.
18. SCOTCH AND OTHER FIRS	Much used in underground workings for making headings, etc.
19. SWEET CHESTNUT	Fruit largely used as dessert, but mostly comes from abroad.
20. WALNUT	Fruit useful both in its shelled state and when pickled in the shell; wood very valuable for furniture making.
21. WILLOW	Wood light, but tough, and is, therefore, greatly used for making into cricket bats.

III. POISONOUS PLANTS

Name of Plant.	Uses.
1. BROOM	Broom-tops are used as medicine, but are very poisonous and narcotic.
2. WHITE BRYONY	Fruit a scarlet berry; root highly virulent causing internal inflammation; if applied to skin produces blisters.
3. BUTTERCUP	All parts poisonous, producing dysentery and can in rare cases cause death.

Name of Plant.	Uses.
4. CUCKOO PINT . . .	Commonly known as Lords and Ladies; all parts of the plant, including leaves and fruit, are poisonous. Do not be deceived by the highly coloured fruit in Autumn. Children have been known, after eating the fruit, to suffer from cramps and convulsions, and to succumb within ten hours after eating same.
5. ELDER	Although berries and flowers are useful, the bark, leaves, buds, and juice of root are poisonous.
6. FOOL'S PARSLEY . . .	Roots resemble Radishes, but must be strictly avoided, as also the leaves, which are very poisonous and may cause death.
7. FOXGLOVE	All parts are poisonous, and although a useful medicine, known as Digitalis, is made from the leaves, same should never be used unless under medical advice because of dangerous results accruing from imprudent usage.
8. FUNGI	Unless well acquainted with the Edible Mushroom, better discard Fungi altogether, as many are deadly poisonous and only an expert can distinguish them.
9. GREEN HELLEBORE . .	Blossoms in early Spring in woods and copses; a poisonous plant that should be strictly avoided.
10. HEMLOCK	This species and the Water Hemlock are both poisonous.
11. HENBANE	The effects of this poisonous plant are identical with those caused by the Deadly Nightshade.
12. LAUREL	Leaves highly dangerous, more so in Autumn than Spring, containing Prussic Acid.

Name of Plant.	Uses.
13. SPURGE LAUREL	Berries should be strictly avoided; bark very acrid; has often proved fatal.
14. DEADLY NIGHTSHADE	Although the poison obtained from this plant is useful when properly administered, it should never be taken under any consideration by those unacquainted with its properties.
15. PEACH	Prussic Acid is contained in the green fruit and foliage.
16. POPPY	Avoid all kinds although the colouring matter obtained from the red petals is useful.
17. COMMON SORREL	The leaves of this plant should be avoided, as they have been known to produce internal inflammation.
18. WOOD SORREL	Although useful as set out in List I., this is really a dangerous poison, having been taken in mistake with dire results.
19. SPINDLE TREE	This tree received its name from its wood being made into spindles; the handsome berries, as well as the bark and leaves, are all injurious.
20. COMMON SPURGE	Whilst the white milky juice of this and other spurges is useful for applying to warts, great care should be taken, as even outwardly it causes inflammation and much pain.
21. WATER DROPWORT	This plant must not be mistaken for Celery or Parsnip. All parts are poisonous, but the roots are much more so than the stem and leaves.



Name of Plant.	Uses.
22. YEW	The wood, bark, leaves, and seed are all poisonous, but the scarlet succulent envelope is not poisonous. The leaves are the worst offenders, and should be cleared away and burnt when a yew hedge is cut to prevent animals feeding upon them.

Note.—In case of poisoning by any of the above the best course to pursue is to take an *emetic immediately* and obtain medical advice as soon afterwards as possible.

General Baden-Powell, in his *Scouting for Boys*, says that in case of poisoning, “the first thing to do is to make him swallow some milk or raw eggs. These seem to collect all the poison that is otherwise spread about inside him. Then, if the mouth is not stained or burnt by the poison, make him sick if possible by giving him salt and warm water, and try tickling the inside of his throat with a feather. Then more eggs and milk, and weak tea. If the poison is an acid that burns, the patient should not be made to vomit, but milk or salad oil should be given. The patient should be kept awake if he gets drowsy.” Mustard and water is also a good emetic, *but the great point is to act promptly as delay is dangerous.*

CHAPTER XIV

MY COUNTRY WANDERINGS

I. EARLY SPRING

By February the days begin to lengthen, and it is then the young naturalist should commence his outdoor studies in real earnest, even if he has not done so still earlier in the year. Personally, I am an all-the-year-rounder, and doubtless many readers of *Nature Stalking* are also. It is only as a result of experiencing the dreary and so-called barren season of Winter that one can appreciate to the full the beauty of Spring, the glow of Summer, and the rich mellowness of Autumn.

February is a good month in which to search for the first Spring plants bursting through the leaf-strewn bed of the woodland, or on some sun-kissed bank. Two of the earliest of all are the Dog's Mercury and the Green Hellebore. The first-named is a very common plant, but the Hellebore is much more local in its distribution. The Dog's Mercury grows in dense masses in woods and copses, and upon hedge-banks. The flower, and indeed the whole plant, is green, and when it first comes through the ground the floral organs

are beautifully protected by the leaves. The plant really forms its flowers underground, and then, by force of youthful sap, it rises above ground, and reveals the first green flush of Spring. It is positively exciting to watch carefully for the first piece of Dog's Mercury to appear, but it is remarkable to notice how quickly plant succeeds plant when a good start has been made.

This common wayside plant is dicœcious, that is, the staminate (male) and pistillate (female) flowers are borne on separate plants. The male flowers are in the form of a raceme, and bear from eight to twenty stamens. The female flowers are far more insignificant, having a two-lobed, two-celled ovary, and two diverging styles. These flowers must be carefully sought after, or they will not be seen. When the Herb Mercury (as the plant is often called) goes to seed, the seed-vessel is rounded and two-celled. It should, of course, be looked for later in the year on the plants bearing the pistillate flowers, the racemes on the male plant gradually dying off.

The Green Hellebore is a really beautiful plant, both the flowers and leaves being particularly graceful. It belongs to the same order as the Buttercups and the Anemone, namely, the *Ranunculaceæ*. It should be sought for in woods on chalky soils, hedges, etc. Although it is not due to blossom until March, it pushes above ground

during February, and should be closely watched and its progress noted. The whole plant is green, the flower being lighter than the foliage. The flower is well worth examination, for, although belonging to the lowest order of flowering plants, it will at first appear to the young botanist as a kind of floral puzzle. There are five sepals upon the calyx, and from eight to ten petals. These latter are small, tubular, two-lipped, clawed, and contain poisonous honey. The lower leaves are large and on long stalks; all the leaves are deeply serrated, that is, the margins are cut into saw-like teeth.

Where the Nut Hazel grows there search should now be made for the first appearance of the pistillate (or female) flowers. You all know the staminate flowers (called catkins or lambs' tails), but few of you are probably acquainted with the flowers from which the fruit eventually forms. The pistillate flowers are a rich carmine red in colour and very small. They are like a little tuft, and if a branch is pulled down and examined success should come your way. Now, how do you think the Hazel becomes fertilised?

I am going to let one of my young correspondents answer the question. Here is an excellent account sent in to me by William Jackson, of Newland, Hull:—

How the Nut Hazel becomes Fertilised

The pollen-bearing and fruit-producing flowers of the Hazel are separate, but can be found on the same tree.

The immature pollen-bearing flowers are exposed through the Winter as stiff and short brownish cylinders in groups of two or more, developing, as Spring draws nigh, into long pendulous yellow catkins in clusters. The fruit-producing flowers are enclosed in buds until the Spring, when they thrust forth their tiny crimson plumes. So they wait, receptive, for the wind-scattered pollen.

The pollen, having been blown by the wind from the pollen-bearing to the fruit-producing flowers, the flower buds soon commence to grow, producing eventually a stalk with leaves and clustered fruit.

The fruit—a nut with a very nutritious kernel—is so assiduously collected and planted by the Squirrels afterwards, though for a quite different purpose, that these lively little creatures greatly help in its distribution.

If there is one sight in Nature to which I look forward with eagerness each Springtime it is the Brimstone Butterflies, which come forth from their

hiding places and flit about the leafless bushes like so many sulphur-yellow fairies celebrating a glorious resurrection.

After the comparatively dull Winter months, when each day seems very much the same, and outdoor life does not appear to change to any appreciable extent, is it not refreshing to see the sun shine high in the heavens, and to notice how all things that live out of doors love the sunshine?

These early Butterflies hibernate all through the Winter in some secluded retreat, and look strangely out of place so early in the year, in their beautiful sulphur coats. Their flight—considering the period of inactivity through which the insects have passed—is quick, although somewhat jerky; but I put it to you that after a six months' rest indoors, without exercise, you would yourself experience a certain amount of unsteadiness on venturing out of doors again after so long a rest!

The Spring migrants of 1909 were late in coming, and only the little Chiff Chaff was true to his promise, and made his appearance before March was out. It was a near go, for my diary reminds me that the little feathered ambassador from over the seas did not turn up until the last day of March, and I was fortunate to hear and see the bird during a heavy storm of rain.

Easter Sunday came before the golden anthers of the Sallow (commonly called Palm) were ready to burst and give to this tree that really beautiful appearance which those who know it always associate with it.

This is one of the chief insect feasts of the year; the others that may be mentioned being when the Bramble is in blossom, as well as the sweet-scented Lime, and the Ivy in the late Autumn. These are the four great banqueting feasts of the insect world, although when the aromatic Honey-suckle is in blossom, many Moths bearing a long tongue or proboscis are attracted at nightfall to the sweet nectar secreted within the flowers.

The Coltsfoot was a perfect picture early in April. This is a plant that particularly appreciates the sunshine. Wet, blustering weather in Springtime does not suit the Coltsfoot a little bit, for the beautiful yellow florets fail to expand properly. Given a plentiful supply of sun, however, a colony of Coltsfoot in full flower is a sight worthy of an artist's brush—the yellow flowers being borne at the summit of a stiff-built stalk, and starring the brown earth with unmistakable beauty.

In early Spring one hardly knows which way to turn, for there are so many interesting animals and plants worth watching and listening to.

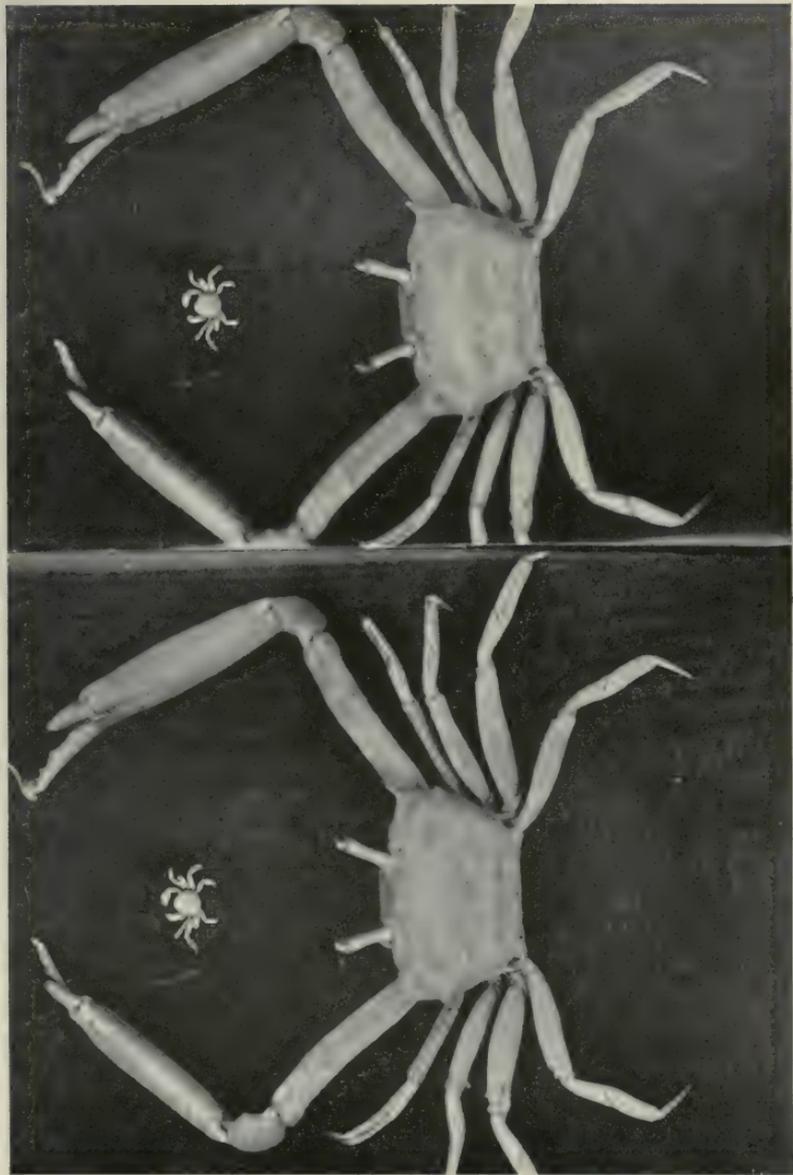
I do want you to know the Tree Pipit, however.

Those who live in the country should seek out some trees along a lane, or hedgerow, especially where there is a nice thick grassy bank wherein the March Violets hide their white and purple blossoms. Look up into the trees, and you will perhaps see a little bird about the size of a Sparrow. He does not fly right away, for, see, he is soaring in the air somewhat after the manner of a Skylark. Watch him carefully; there, having reached a certain height, the bird commences the descent. Notice that he comes down like a shaftless arrow almost; there is hardly a motion of the wings or body, but listen to the sweet lyrics the bird is uttering.

As he nears the ground or tree from which he rose, the song increases in volume and sweetness, until at last the listener stands spellbound, captivated by the little mite in feathers whose song-flights (to those who know them) are one of the greatest features of our English countryside. If you are successful in stalking it, and learn to know it and appreciate it as I have done since I was a boy of six, you will never regret when your attention was drawn to it.

II. THE WOODLAND IN MARCH

The pleasure of country-life—that is, so far as observing the various changes of the landscape



Large Crab and Small Pea Crab.

and the close study of the wild life through each period of the year—is considerably enhanced if the observer makes a point of seeing Nature under as many aspects as possible: it is only by rambling continually throughout the duller months that one can appreciate to the full the advent of Spring and then the richness of Summer.

The woodland in March—that is, if the weather be at all balmy, such as the morning of which I write—gives evidence on every side of the approach of Spring. On March 2 Dog's Mercury was in flower, the Green Hellebore was well above ground and the flower-buds prominent: both these are two of the earliest of the woodland's Spring flowers; whilst several days previously the delicate little red tufts on the Nut Hazel—known to the student as the pistillate flowers—were observable. I do not ever remember seeing the male blossom of the Hazel under more delightful conditions than on the aforesaid morning in early March. The catkins, loaded with golden pollen, as seen against the dark and leafless trees and shrubs of the woodland—and more especially where a flood of sunlight caught them—were never more appreciated, and the more so because I had been watching those "Lambs' Tails" when they were mere little notches, hardly noticeable to the casual observer.

How the balmy Spring air seems to have set

the birds singing! Skylarks in the fields bordering the woodland in incessant song; Song and Mistle Thrushes in strong competition one against the other as to the richness and variety of their sweet cadences; nimble little Brown Wrens singing loud and long; Robins in sweeter dulcet notes than ever; Chaffinches tuning their lutes and practising that abruptly finished warble; Hedge Sparrows uttering their cheery little matin from the topmost twigs of the Hazel. Ring Doves have found their love-songs, and I know of no more rural sound; Great Tits make the woodland ring with their Spring notes; a Blackbird or two contribute their mellow vespers; Nuthatches call loudly and Woodpeckers laugh; Tree Creepers scamper round the tree-trunks as agile and frolicsome as ever; a Sparrow Hawk pitches on a neighbouring tree-top and casts around as to where shall be laid those blood-daubed eggs; noisy Jays shriek with veritable delight that Spring is again near at hand. Proud Pheasants strut by the side of the woodland; Starlings chatter; and noisy Rooks disport themselves on the ploughed lands.

For months past there has not been such commotion and jubilation in the birdland of the woods as on this glorious March morning.

One notices the threefold leaves of the Wood Sorrel and the fast unrolling Honeysuckle; the

fresh green of the Elder and the Wild Cherry; the delicate bells of the Snowdrops in the old orchard; the rich red tints on the twigs and branches; the Hornbeam fast losing its Summer tresses, for the new leaves are quickly forming and pushing off the old garb of a bygone season.

Primroses and Cowslips are now showing above ground; the green sheen on the Brambles—an apt illustration of the glories of light and shade—is one of the chief treasures in the woodland just at this season; whilst after a shower of rain or a heavy dew, the dewdrops glisten in the sunbeams like so many gorgeous sparkling gems.

Spring is in the air. Nature lovers know the delight of that first experience of early Spring: it cannot be written about, it must be felt to be appreciated.

No Summer visitors have reached us at the time of writing—if we except a female Blackcap which was seen in the district towards the end of February, a truly phenomenal occurrence—but the likeness of two of the notes of the mimicking Great Tit or Oxeye to those of the Chiff Chaff reminds us that the little herald from the Mediterranean will soon be due, and from now onward the careful student of wild life has one continuous round of unalloyed pleasure before him.

Many wild plants blossom during March. The bright yellow of the Coltsfoot will star the earth

with its blossoms (and note the flowers appear before the leaves), the Lesser Celandine, Blackthorn, and, of course, the sweet-scented March Violet, will all be found by those who take their walks in the country, where there is always so much to be seen and heard.

In March, too, one of the great floral sights and insect feasts of the year takes place, namely, the blossoming of the Sallow. The golden yellow of the male tree (male and female grow on separate trees) is a perfect sight in the early Spring, and at night-time the Moths come forth from their hiding places and sip the sweet nectar. Sometimes they take in by means of their long proboscis, or tongue, more than is good for them! On a sunshiny day, too, the Bees (both Hive and Humble) visit the Sallow in large numbers. Their pleasing monotone is one of the most delightful country sounds; and to see the Humble Bee fussing about, as he is so fond of doing, is worth walking far to see. Just look at him carefully the next time you come across him, dressed in his blue-black velvet uniform with yellow stripes, and tell me if you do not agree with me that he looks like the trim sergent-major of a smart regiment of Hussars!

III. THE WOODLAND IN APRIL

He—that is, my reverend friend, who has for over twenty years faithfully ministered unto his

flock and served his fellow men and women as a good and zealous citizen—had often expressed a wish to accompany me on one of my Natural History rambles, and thus it came to pass that on a fine warm Spring day we found ourselves wandering through the woodland.

“Hark! do you hear that?” said I. “There, in the tall Oak to the right of us, is the Chiff Chaff, one of the earliest heralds of the Spring.”

To the untrained ear and eye sights and sounds of the countryside are often unseen or unheard; but after a while my friend had little difficulty in hearing the notes of our Summer visitor from the shores of the Mediterranean, and, indeed, throughout our ramble my companion was so eager and attentive that identification was a comparatively easy matter. One may take into the country an indifferent observer, and it is no light task to interest and amuse him; given an intelligent companion, half the battle is won.

“Come, take your staff in your hand,” said I, “and we will explore this bit of woodland, through which I have rambled during the past Winter in all weathers, and watched, week by week, Nature’s slow but sure progress.”

“What a collection of plants there are in this tangled hedgerow. Tell me, please, what are their names,” said my friend.

“Well, that golden flower is the Lesser Celan-

dine," I answered; "that reddish flower is the Red Dead Nettle; here is the White Dead Nettle almost bursting into bloom, and here is the Stinging Nettle, an identification you may make doubly certain of by pinching the leaves with the fingers. Those long greenish stalks belong to the Goosegrass, also known as Cleavers; that Parsley-like leaf is the Wild Chervil—one of the earliest wild plants to garnish the countryside with the fresh green of Spring—and these sword-shaped leaves here are those of the Greater Stitchwort which will be in flower very shortly now. These coarse-looking leaves here are those of the Garlic Mustard, which will soon be blossoming; here is the Woodruff—a typical woodland flower—and notice, too, the prominent leaves of the Wild Arum or Cuckoo Pint, whose curious flowers have not yet made an appearance."

"Do you hear in the distance that mellow and measured song of the sooty Blackbird?" said I.

"I do," replied my friend; "but, tell me, what is that louder and more varied songster at the rear of us? Is that also a Blackbird?"

"Nay, sir," I replied, "that is a Song Thrush, and once having carefully listened to the songs of the two birds, confusion is impossible."

"I understand," said he. "I hear now that the lyrics of the Thrush are more varied, louder, richer, and more powerful, whilst those of the



Oak and Ash.



Wood Anemones.



Hedge Parsley.

Blackbird are more mellow and more of the nature of a vesper song."

"Excellently put, indeed," I replied, delighted at the progress my pupil was already making.

"What is this ivy-leaved looking plant trailing along the ground?" asked my companion.

"That is Ground Ivy," I answered, "and that three-leaved plant hard by is the Wood Sorrel. See, here, the small, frail, white petals are already showing, and here also is the Wood Anemone, which will shortly be bursting into flower."

"What a curious scolding note is being uttered by a small bird in that tall Fir just now, and farther on what a loud Spring song is being poured forth by another tenant of this woodland glen," queried my friend; "tell me what are these?"

"The first bird," I answered, "is a Blue Tit. Look at him through my field-glasses, and notice what a dapper little bird he is."

"Beautiful," replied my friend, as, after manœuvring a while, he adjusted the glasses to suit him.

"The other bird you ask me about is a Great Tit, a relative of the Blue Tit, and the largest member of the Titmice family which breeds in the British Isles."

"May I have a look at him, too?"

"Certainly," I answered, "you will see him by putting the glasses upon yonder dead Oak branch,

for there, sure enough, he is dexterously searching for the lurking insects and uttering his strong Spring song at the same time."

"I have a splendid sight of him. What a lovely creature, to be sure, in his green back and gorgeous black and yellow waistcoat, but how restless he is."

"Yes," I replied, "all the Tits are very restless birds; it is one of their chief characteristics, for they always seem occupied searching for insects and their larvæ, on which for the most part they entirely feed."

"Then they do a considerable amount of good?" queried my friend.

"Undoubtedly," I replied, "they are some of the best feathered friends which the fruit-grower possesses, killing and devouring thousands of obnoxious insects."

"I see another small bird in yonder Oak; what is that species?"

"That is a Coal Tit. You will notice it is not nearly so gaudily attired as the two other Titmice we have noticed already, having a black head and sombre brownish plumage generally. It is to be distinguished from the Marsh Tit by the white nape."

"I see," put in my companion, "and shall we also see the Marsh Tit, and what of the Long-tailed Tit that I have heard of?"

"We may perchance see both species," I

answered, "but neither of them are so numerous as the other three described; we will, however, leave Titland, for I heard a tapping at the back of us which introduces us at once to the Nuthatch, a typical woodland bird."

"The Nuthatch, did you say?"

"Yes," I replied. "Be very silent, for he is a recluse bird, and hates to be watched. I have him now; it is a fine male. Just watch him hammering away at that dead branch; notice his short tail, ochre breast, bluish-grey back, and generally his uncommon appearance amongst British birds."

"I have a fine sight of him. Why he has now flown a little further away, and is actually coming down the tree head foremost."

"He never comes down in any other manner," I replied.

"And what kind of a song has he? Does he aspire as a songster?"

"No," I answered, "he possesses a very human-like whistle; but beyond this his vocal powers are not great."

"And what is his food?"

"Come down this woodland glade and I will show you," said I. "You see that rough-barked Oak tree and those empty nut-shells cleverly and securely notched in the crevices?"

"I do; but what of that?"

“That,” I replied, “is the work of the Nut-hatch. He has extracted the luscious kernels from the nuts during the past Winter, and had doubtless laid by a store for the lone Winter days. He also feeds on Insects, Acorns, and Berries, and is fond of Beechmast.”

“A very differential diet,” said my friend; “and, as you spoke of it storing up food for the Winter, I presume it is a resident bird?”

“It is,” I answered; “and I am glad to report that so interesting a species is undoubtedly increasing in this neighbourhood.”

“What a beautiful show of Primroses carpet the ground around, and how green it is underfoot from this curious plant, which is so very plentiful.”

“Yes, the Primroses are in their beauty now, and that green flower of which you speak is the Dog’s Mercury, one of the commonest, as well as one of the very earliest, of the woodland’s Spring flowers,” I replied.

“But here is a still more noticeable plant, with bells of green and very attractive foliage. I never remember seeing it before. What is that?” queried my friend.

“That,” I answered, “is the Green Hellebore, also an early Spring flower, but not nearly so common as its fellow of the woodlands, the Dog’s Mercury. Here, too, is the first Dog Violet I have noticed in flower this Spring; but this season

being much earlier than the backward one of last year, a beautiful sight of blue will soon be presented by this scentless flower."

"And is that beautiful flower—a subject fit for an artist's brush—scentless, and yet it is a Violet?"

"Yes," I responded; "scentless it is. One does not expect to find the Sweet-smelling Violet here in the woodland to any extent, although, true enough, here are some White Violets whose aroma is even sweeter than the Blue variety. The scented Violets much prefer a grassy bank facing the South, and here one should search for them in early Spring, but the Dog Violet is not nearly so particular in its choice of locality, and will grow almost anywhere."

"How green that side of the wood looks," said my friend. "What trees are they?"

"I should say they are Sycamores," I answered, "for this is one of the earliest trees of the woodland to burst its leaves, and put on the fresh green flush of Spring, and here, see, is the Wild Cherry in leaf; the blossom will only be a few days later."

"And tell me, what is that destitute tree yonder, just a little daub of green here and there?"

"That is a Larch Fir," I replied, "and if you see that same tree in a week or two from now, when the soft green foliage and the reddish flowers are upon it, you will say it is one of the fairest sights of the woodland."

“And do any birds nest in such a tree?”

“Well, I do not know that they do in the Larch Fir,” I replied, “but underneath the pliant branches of the Spruce Fir the Gold Crest often suspends its beautiful little nest.”

“Are there any nests now, or are we too early yet?” put in my friend.

“Oh, dear, no, we are not too early,” I answered, “for, the season being early, both Song Thrushes and Robins have young, and the young Rooks have now been sunning themselves on the leafless branches surrounding the Rookery for some few weeks.”

“How I should like to see a Song Thrush’s nest and eggs, with those freckled blue shells,” said my companion.

“That is a wish soon gratified,” said I, “for the Song Thrush is a most plentiful bird—much more so than the Blackbird—and here in this secluded woodland one finds the early nests, although the birds mostly resort to evergreens and plantations during the early Spring for protection from the keen winds we so often experience. But here in this Rhododendron you will observe a nest of the Song Thrush, containing three eggs.”

“I never saw a fairer sight in Nature,” responded my friend. “How beautiful the blue eggs are thrown up by the brown-lined nest, and

how firmly felted together the structure is! Will many more eggs be laid before the clutch is completed?"

"Probably one or two more will be laid," I answered; "but early nests I find usually have but four. Here, luckily, is a Blackbird's nest also. This is a stroke of good fortune, for I wish to point out to you the difference in the home-steads of the two birds. You will notice that the nest of the Thrush is much deeper and more cup-shaped; also that it has inside a coating of rotten wood and mud, whilst that of the Merle, although equally firm, has a lining of fine dry grass."

"A very simple and yet effective object-lesson in avine architecture," replied my friend.

"Do you hear that spasmodic little song that is uttered ever and anon as we ramble through the copse?" queried I.

"That," answered my friend.

"Yes," I said.

"I have noticed that; what is it?"

"It is the Brown Wren," I replied.

"Do you mean to say that so small a bird as the Wren utters such a strong song as that?"

"It is indeed true," said I, "and if you will peer silently into that dead bracken you will observe the mouselike little creature creeping along, and see, now he has flown into the topmost branch of

that quickly leafing Hazel, and is again making the welkin ring with his melodies."

"Have you noticed the Robin as we have passed along?" I asked.

"Yes, I think I know the song: it is a sad utterance, methinks, and I know of some persons who have a dislike for it."

"True," I answered, "it is a somewhat melancholy song; but it is so frequently uttered when all other song birds are silent, that I appreciate and admire it."

"Is it a lovable bird?" queried my friend.

"It is a most attentive and trustful species," I answered; "but a born fighter, and woe betide any bird of its own size with whom it comes into conflict. If that legendary Sparrow had not been armed with a bow and arrow, and had had a fair, stand up fight with the Redbreast, we should never have had the nursery rhyme of our childhood respecting the fatal arrow from the Sparrow's deadly bow. For the most part, however, Robins fight amongst themselves, and do not interfere with other species."

"And where do they nest?"

"In ivy-covered bowers, banks, stumps of trees, old cans and baskets, and other out-of-the-way places. I chanced to see one cross our path just now and disappear into that ivy-covered bank yonder. Stay a moment, whilst I look along.

Yes, here is the nest, and the female bird, with trustful confidence, will not leave her precious charge. Come hither and see for yourself the trustfulness of the bird."

"I see her glistening eyes," said my friend, bubbling with excitement. "What a snug nest she has made, how cosy and warm. Has she eggs or young?"

"Probably she has eggs and is sitting, but we will not disturb her, and will repay her for her consciousness of protection by leaving her undisturbed."

"I hear a harsh note now and also an extraordinary sort of chattering. What woodland sounds are these?"

"The first is the alarm cry of the restless Jay, the sentinel of the woods. Here are three or four which have been trapped by the gamekeeper, for they do considerable harm to game. The other sound you heard proceeded from a rough old Starling perched on the summit of that Scotch Fir. There he sits sunning himself and chattering the while. He will probably nest in that hole lower down the tree, his mate laying therein from four to six beautiful pale blue and unspotted eggs."

"Can you tell me," said my companion, "what bird it is which has such an abruptly finished song? I hear it in my garden."

“Certainly,” I answered, “it is the gay-plumed Chaffinch.” I imitate to the best of my ability that well-known Chaffinch song, and it is at once identified by my friend, and, promising to honour me with his pleasant company again on some future occasion, we leave the woodland, listen for a moment or two to the sweet cadences of soaring Larks, and proceed again towards civilisation.

IV. NOTES ON THE SPRING OF 1908

It is said that one Swallow does not make a Summer, and if the old adage be true (and it must be admitted we have a good deal of faith in it) then it never applied with a greater truism than during the Spring of 1908. True enough, I saw my first 1908 Swallow on Good Friday. Whence he came, and whither he went, I know not. I caught just a passing glimpse of this pleasing feathered ambassador from over-sea, and then he was gone. On the same day I heard for the first time the soft bugle-call of the Chiff Chaff in my favourite copse. He, blithe little herald, has never failed me these many years; but during the memorable season named he must surely have tarried on his journey somewhere in the sunny South, for April's lease had already begun to run out before I heard him.

Not far away from the Chiff Chaff I espied my

first Willow Wren. Both birds are remarkably alike, unless closely examined. Both species are Summer visitors to our island home (although undoubtedly a few Chiff Chaffs spend the Winter with us); both haunt the topmost branches of the tallest trees in the woodland, and both birds build their oval-shaped nests upon the ground. How then can the birds be distinguished? By their songs. Whilst the Chiff Chaff sings, "Chivy-chavy, chivy-chavy," the Willow Wren utters a most delicate, harmonious little strain, and has aptly been called the piccolo soloist in the orchestra of the woodland choir.

As we sat on the Primrose-covered bank facing South on Good Friday, "far from the madding crowd," it was delightful to notice the friendliness of the birds. A number of Chiff Chaffs, Willow Wrens, Blue Tits, Hedge Sparrows, Chaffinches, a Robin or two, and a few other kinds of feathered folk, carried out a series of interesting operations within arm's reach almost, and we congratulated ourselves that we had once more kept up our time-honoured associations of taking tea out of doors in the wild greenwood on Good Friday. Alas! we little knew as we sat on that southern bank what was in store for us, but of this more anon. Passing on our way, the sun commenced to sink low in the West, the wind blew keen and chill; but above its sighing my ear caught the notes of

a Tree Pipit some way ahead of us. After a careful look-out the migrant was located at the summit of a tall Elm tree, looking strangely out of place amid the wintry surroundings (for 'twas evening now), but singing cheerily that strong musical note of his, which those who know the Titlark love so well.

I have now mentioned four distinct migratory birds which it was my good fortune to locate on April 17, and although after that date I heard a few more Chiff Chaffs and Willow Wrens, and saw a solitary Tree Pipit, it was not until April 26 that our perennial feathered friend, the Cuckoo, uttered voice and enabled me to add another species to my meagre list. That the Cuckoo did not arrive upon our shores much before the date named is pretty certain, and the usual ridiculous chroniclings of the March birds may be dismissed without further comment.

An instance came under my notice recently of how easily people may be deceived. A ploughman of my acquaintance imitates to a nicety the mellow call of the wandering *Cuculus canorus*, and as early as the first week in March the bailiff and the men on the estate stated that they had heard the bird. He sang, so they said, from the tall Elms in front of the lawn, but the curious part of the story was that whenever the ploughman went with his mates to hear the wonderful March Cuckoo it could not be



Crab Apple Blossom.

heard! One day the culprit was discovered. The gamekeeper chanced to be passing a barn where the ploughman was tending his horses. Hearing as he thought the call of the Cuckoo emanating from the inmost recesses of the thatch-laden building, prompted him to peep in at the window, and *the human Cuckoo* was caught in the act!

With this prelude we may now seriously set ourselves out to answer the question, "Where was the Spring of 1908?" For weeks we patiently waited. We watched the first pieces of Dog's Mercury and the Green Hellebore force their way through the leaf-strewn bed of the woodland; cast longing eyes upon the first pale Primroses of the year; noted the opening of the Sallow blossoms and the Hazel catkins, and hunted for the first nest of the season. So far, so good. Things generally in the country were noticed and noted as decidedly backward. The keen biting winds and the absence of sunshine retarded Nature's progress, but as day succeeded day we hoped—as we had done so often before—that the balmy air of Spring would come and set everything that lives out of doors pulsating and throbbing with life and joy. In the meantime we experienced arctic weather of great severity.

The feathered tribe made haste to build their nests, some of them in ridiculously exposed situa-

tions, others more concealed. Eggs were laid, the young ones hatched and almost reared, and then—the Snow! One day in April as I wandered through the woodland nest after nest was full of Snow, the eggs cold, the young ones dead. Great mortality in bird life must have taken place. Nine female Pheasants known to me were sitting bravely and complacently upon their olive treasures up to April 23 at mid-day. With the advent of that remarkable fall of Snow, however, six of the birds gave up their task. The remaining three sat on, and were actually almost hidden under the white mantle that lay inches deep all around. The Fox was not slow to take advantage of this sudden return of wintry weather. The three brave game birds mentioned paid a heavy penalty for their courage and self-sacrifice. Each bird was snatched from its homestead and carried off by Reynard, so that eventually all the nine nests, with their precious treasures, were ruined.

So, too, with the young Rabbits. Hard weather means hard hunting for animal folk. Hunger, and oftentimes starvation, stares them in the face. Food must of necessity be procured at all costs. The Fox, as a consequence, was in dire straits to keep the home well supplied, and an enormous number of young Rabbits fell a prey to his cunning. The Partridges that started nesting had a sorry time, and sportsmen were perturbed as to the

effects later in the year. The year 1907 was a very bad Partridge season, and the inauspicious start in 1908 must have been disheartening to those who are interested in the sport afforded by the "little brown bird." The Partridge, of course, is a ground nesting bird, and any of our smaller feathered favourites that were tempted to build their family nurseries were, I am afraid, doomed to bitter disappointment.

The late leafing of the trees, if nothing else, was sufficient cause for us to exclaim, "Where is the Spring?" I have never known the foliage and flowers so far behind, and although the Hawthorn was flecked with green here and there in late April, the countryside generally had even then a wintry look, and it was left for the sunny hours of May to complete what April had failed to accomplish.

Walking along a hedgerow early in May an old nest of some kind was discovered. It was just a ball of dead grasses, carelessly thrown together, but the structure was decidedly ball-shaped. Curiosity prompted the finder to look inside. A remarkable sight met his gaze, for there, snugly ensconced in the centre of the habitation was a Dormouse enjoying its Winter slumber. The little fawn-coloured rodent was rolled up in a ball, feet to feet, long tail brought right over his head, eyes tightly closed, an illustration of a wonderful

trait in the world of animal life. There he was, little slumberer, no longer a wee, timorous beastie as we know him to be, but sleeping peacefully and securely. How ungracious it would have been on our part to awaken him! He looked so comfortable and peaceful with all the world. The Spring had not yet come, and even the little Dormouse, tucked up in its Winter home, seemed to be aware of it. Perchance, he was dreaming of sunny skies, soft airs, flowering slopes, and Bluebell-covered woodlands. But at the time he was discovered 'twas only a dream, and he slept on!

In the woodland one late April morning I witnessed such a sight as I have never seen before. The ground was water-strewn; dead branches from the trees had been wrenched from their moorings by the gale overnight, the Primroses were ruined by the snow, many small trees had been thrown across the greenwood's path by reason of the weight of snow they were suddenly called upon to bear; the birds were almost silent, save for the spasmodic outburst of a Thrush and a Lark in the adjacent meadows; the Dog's Mercury hung its once fresh green head and seemed wilting as it is known to do later in the year, and it was a relief to step out of the wooded fastness and take to the open country again.

Down the lanes water was rushing, the low-lying meadows were flooded, well-known by-



Eggs on Oak Leaf.



Larvæ.



Pupa in dead Oak Leaves.



Larva full grown.

paths were impassable, and we were strangely reminded of February-fill-the-dyke! Was there anything wrong with the calendar? Had some one blundered in its compilation? Old men of seventy years tell me they have never experienced such a Springtime, and it seems evident that there was not within living recollection such unseasonable weather as that we passed through. A little Field Mouse allowed me one morning to watch him enjoying his breakfast. He was dexterously feeding upon the unrolled buds of the Hawthorn, and I could almost stroke the gay little sprite. I had been watching the Hawthorn for weeks past, but it hardly made any appreciable move until the first week of May. The blossom buds refused to burst and give to the hedgerow that mass of milk-white bloom that is associated with early Spring. Certainly, a few wild plants were more courageous than the rest. Hedge Parsley, Ground Ivy, Lesser Celandine, Red and White Dead Nettles, and Greater Stitchwort were in flower before April was past, but the Garlic Mustard refused to budge until that balmy Spring day, for which we all so anxiously waited, arrived.

We, like the animals and plants, appeared ill-tempered and disconsolate. We were not ill, of that we were certain, we were simply waiting for the Spring—for soft winds, sunshine, blue, un-

clouded skies, the songs of birds, the greening of the hedgerows and trees, the blossoming of the flowers.

In the garden how anxiously we watched our favourite plants, but how late and how lazy they seemed! Where the snow fell like a thunder-clap from the roof top the Daffodils and Hyacinths were ruined, and lay a tangled mass of dismantled blossoms and leaves.

The Tits returned to the garden for food, whereas they should have been away in the woodland busily engaged upon family affairs. The Robin hopped down as we turned up the soil in April and snatched at a struggling Earthworm. His right place was upon some sun-kissed grassy bank rearing his spotted chicks. The Starling perched disconsolately upon the weather-vane, shrugged his shoulders, and called, "P-h-e-w!" And well he might!

Many Summer birds were overdue. The Nightingale should have been singing in the thick retreat of the Briar bush long before the first week of May; the Whitethroat should have been seen displaying his ludicrous antics over the hedgerow; the Blackcap and the Garden Warbler (two of our finest song birds) should both have returned to their time-honoured habitats before April's lease had run out; and the gentle Martin should have been in her place under the eaves. That they

would come we were assured. That the unseasonable weather would soon be only a memory we felt certain, but at the time we were fully qualified to ask the question: "*Where is the Spring?*"

Curiously enough, May Day signalled its advent in a most remarkable way, for it proved to be quite the first best day of the year. Brilliant Summer-like weather prevailed, and from every copse, meadow, lane, and hedgerow the birds—Nightingales, Cuckoos, Tree Pipits, Greater Whitethroats, Swallows, Martins, Chiff Chaffs, Willow Wrens, Redstarts, and other feathered creatures—made joyous melody. The early Butterflies—Brimstones, Small Garden Whites, and Small Tortoiseshells—came forth from their hibernating quarters; the Bees gathered nectar and pollen from the flowers; the Primroses had a new lease of life; the Bluebells blossomed and the Cowslips reared their stately heads above the grassy bank sides, and all Nature seemed pleased. A wonderful effect, too, the weather had upon human beings! Every one seemed better in health and temper—it is remarkable how cheerful the sun makes us feel—but it was a long, dreary wait we experienced throughout the lone Winter and early Spring days until the advent of one of the most glorious May-days within living recollection.

V. SOME JUNE NOTES

What a splendid egg season the Summer of 1906 proved to be. I never remember such a large number of Blackbirds' and Song Thrushes' eggs, and I have noted with considerable interest what a large proportion of the nests of these two species were built right on the ground. Why is this? Has this observation been made by any readers in other districts? If so, I shall be glad to hear from them. Large clutches of eggs, too, seem to have been the rule rather than the exception. To cite an instance or two. The wild Pheasants had enormous clutches, two nests in particular containing thirty-eight and forty-three eggs being worth recording here. The gamekeeper who pointed out these nests to me during an early June ramble was of the opinion that three females laid in the nest containing the clutch of thirty-eight eggs, and five females were responsible for the large clutch of forty-three eggs.

It would seem impossible for one hen Pheasant to attempt to incubate such a large clutch, although the bird sitting on the thirty-eight eggs tried hard to do so. She placed them as close together as possible, but no matter how many devices she resorted to she was unable to cover successfully all her precious treasures. Several

eggs were taken from both nests by my game-keeper friend and placed under fowls.

I also noticed that the Yellow Bunting almost invariably had a clutch of four eggs during 1906, whereas I usually find three completes the clutch. The Greater Whitethroat was especially common in my neighbourhood during the Summer mentioned, and all the nests I located contained not less than five eggs in each. One bird I missed very much those beautiful June evenings, and that was the Grasshopper Warbler, which seemed to be so very plentiful—comparatively speaking—during the previous Summer. I certainly saw and heard the bird on several occasions during 1906 in Sussex, but in Hertfordshire it did not seem nearly so well distributed as in 1905.

June is the month of Roses, and although the varieties in the garden suffered terribly from the late frosts, storms of rain, hail, and snow, there was, after all, a finer show than in 1905. The bushes in my garden were one mass of blossom, and even in our changeable English climate June has still to be counted as the month of Roses and of heavily-leafed trees and plants. I have never, since I became an amateur rosarian, seen Rose trees so blackened and the leaves cut up by the frost and hail storms as in the year named, and during early Summer it was positively disheartening to look at the bushes. Warm sunshine, gentle

rains, balmy air, and blue skies changed the scene, and at last all was as well as if nothing untoward had happened.

There seemed to have been a large number of Orange-tip Butterflies during the aforesaid season, and I noticed particularly the preponderance of females as they danced coquettishly over the flowers in my garden and along the countryside. Having settled, how difficult it is to locate the little wanderers again, the undersides of their wings when folded harmonising very wonderfully with the surroundings. The Orange-tip—at least the male butterfly—is well-named, and the beautiful tips of orange which the wings of the male bear are strikingly thrown off against the otherwise white colouration.

Back in the Spring I also noticed the great number of Small Tortoiseshells upon the wing, and several specimens of the Woolly Bear, the larvæ of the Tiger Moth, came under my notice. These hairy larvæ appear to be despised by most of our British birds, and doubtless the hairs serve the larvæ well in warding off enemies. There is one British bird, however, which is especially partial to hairy larvæ, and that is the Cuckoo. Doubtless the hairs on the larvæ of the Tiger Moth and other insects tickle the throat of a bird in the same manner as the human throat is tickled and irritated when a fish bone is acciden-

tally swallowed, but the Cuckoo is no respecter of persons in more than one way, and bolts the Woolly Bear with apparent ease and relish. What a voracious appetite the young Cuckoo possesses! It is an interesting sight to watch a pair of small birds feeding a young Cuckoo, and if one's knowledge of the insect life of a district is of an elementary character, one has only to watch carefully the many different varieties of larvæ brought to a young Cuckoo by the foster-parents to have ocular demonstration as to the insect life of the district in which the young Cuckoo happens to be hatched.

During a hail storm in the early Summer (so-called rather than real) it was most amusing to see the young Pheasants in the park running about and picking up hail stones! In no case did the stones appear to be swallowed. The youngsters evinced keen delight in picking them up, but dropped them on finding how icy cold they were!

It is wonderful the patience which some fowls possess in hatching Pheasants' eggs, and one particular hen I had under observation brought off no less than over eighty young Pheasants! This is, indeed, a record of which any mother—feathered or otherwise—might be proud. Curious to relate, this hen would not under any circumstances take to a brood of young Pheasants *in the coop*. She was tried with a brood in this position

over and over again as a slight recompense for her diligent and praiseworthy labours, but all to no purpose. Immediately a fresh sitting of eggs was given her, however, she settled down upon them and brought off successfully another valuable brood.

It is interesting to notice that young Pheasants—unlike many birds—are born with their eyes open, and are able to run about within an hour or two of being born. The foster-mother—the appliance called by that name, not the fowl—saves many a young life, and I have seen a number of young Pheasants helped from their shelly home head first which have been at once put into the warm foster-mother (heated by means of an oil-stove) and very successfully reared. Once in there, the keeper's mind is at rest, for his precious chicks are comparatively safe.

There were several nice companies of Swallows and House and Sand Martins during 1906, and when the meadows are one sheet of flaring yellow it is always a fascinating sight to watch the Swallows especially cleverly swinging over the top of the Crowfoot with unerring flight, and uttering ever and anon their shrill alarm note, which is much like that of the Pied Wagtail. I consider the Swallow the best bird on the wing of the three species mentioned, and I once noticed one in a very long building which had a great number of

iron rafters and girders below the roof. It was wonderful to see this Swallow deftly swerve along the building and successfully contrive to evade coming into contact with any of the rafters. It was much perturbed at finding itself a prisoner in the building—having unwarily entered through a doorway—but after affording much entertainment, it eventually left the building, and was able to pursue its airy flight to more advantage in the spaciousness of the open air.

VI. A MELLOW OCTOBER DAY

As I write it is a mellow October day, one of the most gorgeous of the many beautiful days experienced by us during St. Martin's Summer.

The Dandelion has taken a new lease of life! See how the plant raises its stately head, and how it is crowned at the summit with a capitulum of golden florets fit for a King to wear. 'Tis a lowly flower, but richly embossed and worthy of far more attention than has been accorded to it. That it possesses great beauty all those who have an eye for the beautiful will agree, but has it any other virtues? From the leaves excellent salad may be made; from the flowers wine of great medicinal properties is obtained; the roots when dried and ground produce chicory. The English word Dandelion is derived from the French words

dent de lion, meaning tooth-of-lion. The edges of the leaves are roughly serrated and are supposed to resemble the tooth of the Lion.

It is a remarkable thing how few people take notice of the golden disc shining resplendent in the Autumn sunlight. Many, passing by the flower, heed it not. Overhead a Skylark sings. Listen to its minstrelsy as the bird pours out sweet lilting notes from its little instrumental throat. The passer-by probably heeds neither the bird nor the flower.

In the tall Elm beyond the Hawthorn hedge a Song Thrush is practising in a monotone. Listen! He dare not trust himself to utter those rich, loud, varied notes that we know he is capable of emitting, but it is a young bird of the year, and by next Spring great improvement in the measure of the song will be manifest.

Look at this stone. Verily, in the country one must look both above and below—new sights and sounds are continually cropping up. Well, the stone, what of it? See those broken shells of many Snails? That is where a Thrush enjoys his breakfast. He is a great lover of the Snail, and upon the Downs I have often found his favourite flint stone and evidence of his work: flint-stone implements of our forefathers, flint-stone implements of a bird, lying side by side!

The Scotch Fir trees bear a beautiful bloom of

blue colour upon their leaves to-day. The sun kisses them, and as one notices the light and shadow upon the rich copper-like boles, and wades through the mass of quickly fading Bracken underneath, it is like unto a living fairyland of quiet and unobtrusive beauty.

How delightful the companionship of trees! How often have I sought quiet communion with them, walked with them and among them, spoken to them, watched the tiny sapling grow up into manhood and marvelled at the forest giant. Give me trees, trees, trees, and still more trees. Have you ever thought for one brief moment what we owe to them? They beautify the landscape, purify the air, temper the winds, influence the rainfall, consolidate the soil, are happy sanctuaries for birds, Squirrels, insects, and other animals; whilst they afford us shelter, food, raiment, and timber!

That an Arbor Day will be instituted in this country, as has been so successfully accomplished in America, is my fervent hope. There can be no happier or better method of celebrating any event than by planting a tree. The acres of barren waste still found in this country might well be utilised, and where now a tract of poor, untilled land exists it is possible in a few years to evolve by judicious husbandry a wild greenwood of surpassing beauty.

There is a weeping note coming from the direction of the belt of Privet bushes. Listen! Do you catch the faint sound? It is a handsome cock Bullfinch taking toll from the rich purple-black berries, and he signals every now and again so that his more sombre-clad mate may know that all is well. This bird, wonderful to relate, pairs for life, and if the young reader will reflect for himself upon this very remarkable trait in the character of a wild creature, I doubt not he will see a lesson of constancy worthy of imitation.

The Gall Flies have been busy among the Oak trees and the Wild Roses this past Summer. A result of their labours may be seen in one of the many species of Oak Galls, better known as the Oak Apple. The round, hard gall known to almost every schoolboy is called the Bullet Gall. The curious gall growths which one comes across in the country are caused mostly by the female Gall Fly puncturing a leaf or twig with her sharp ovipositor. Having done this she proceeds to lay a number of eggs in the incision made. Irritation is caused to the plant, or tree, the egg hatches, and the larva finds himself embedded eventually in a soft, spongy homestead, if it be the Oak Apple Gall. There are over fifty different kind of Galls found on the Oak tree alone, and of these my friend, Edward Connold, has recently told us a great deal of interest in his new book devoted to



Polyphemus Moth Emerging.



Note the
Feathered Antennæ.



Polyphemus full spread. Note the Eye Spots.

these curious vegetable growths. The Bedeguar, or Robin's Pincushion, upon the Wild Rose has also been very prolific this season, and I have myself secured some very fine specimens. Having procured one of these pretty fibrous, mosslike excrescences, cut open the gall and within you will find several cells or chambers, each containing a white legless grub, who seems very much disconcerted and upset at such unwarrantable intrusion!

A Jay went screaming by just now. The rascal! Perchance he was thinking of the fine time he has had on the Common this past Summer among the Thrushes and Blackbirds. And that reminds me he did not stay his tricks there, but also unwarrantably interfered with and destroyed a nest of young Nightingales.

How the mention of the name of that renowned songster calls up memories of the bygone! We hear, as in a dream, its ecstasy of song, the rising and falling, the harsh, the liquid, the soul-inspiring music. We may well feel constrained to say with Miss Marie Corelli, herself a great lover and admirer of Nature: "Hush! What exquisite far-off floating voice of cheer was that? I raised my head and listened entranced! 'Jug, jug, jug! lodola, lodola! trill-lil-lil! sweet, sweet, sweet!' It was a Nightingale. Familiar, delicious, angel-throated bird! How I blessed thee in that dark hour of despair! How I praised God

for thine innocent existence! How I sprang up and laughed and wept for joy, as all unconscious of me thou didst shake out a shower of pearly warblings on the breast of the soothed air! Heavenly messenger of consolation . . . even now I think of thee with tenderness—for thy sweet sake all birds possess me as their worshipper; humanity has grown hideous in my sight, but the singing life of the woods and hills, how pure, how fresh! . . . the nearest thing to happiness on this side heaven! The Nightingale's liquid notes floated nearer and nearer. I seemed to be drawn along like one in a dream by the golden thread of the bird's sweet singing."

VII. WILD LIFE IN NOVEMBER

It is quite true that the month of November is usually associated in our minds with memories of fog, mist, damp, and the like, the first link in Winter's oftentimes lengthy chain. However, November, as a season for the observation of wild life, has its compensating advantages—the law of compensation, of waste and yet renewal, is intensely brought home to the careful and thoughtful student of Nature and her wondrous ways—for with the first frost or two down come the leaves toppling to the ground from their Summer abode, allowing us the more easily to observe such

species of birds as the various Titmice, Nuthatch, Tree Creeper, Woodpeckers, and similar tree and woodland-loving species.

During the wealth of Summer foliage many of these birds have been securely hidden away from the field naturalist's eyes; even his strong prismatic glasses have failed to reveal many of the feathered tenants of the woodland, as they cautiously peered out at him from the thick shade of a blossoming thorn, and then hied away behind the dense masses of foliage which Summer yields.

In November, however, the scene is changed. Many trees and hedgerows are leafless, and a severe frost soon puts an end to Summer's lease of life. It is pleasant once again to be able to watch and follow these tree-loving birds without let or hindrance, more especially because during the Autumn and Winter solstice, birds, and, indeed, all tenants of the countryside, seem so much more easy of approach, the temerity exhibited during the nesting season having temporarily passed away.

Come with me for a ramble down some country lane; notice as we pass along the brown stalks and seed heads of a great variety of plant life, the flowers of which have so pleased us during the past Spring and Summer. Even now in November some wild flowers bloom in their endeavour to thwart the inrush of Winter, and in this respect

we may specially mention the Knapweed, Lesser Stitchwort, Herb Robert, and Toadflax. The large umbelliferous seed-heads of the Hedge Parsley and the Cow Parsnip are specially prominent, the latter particularly so.

The distribution of seeds and plants, the manner in which they are often carried by birds and other living creatures, affords many an interesting object lesson. Throughout the whole realm of Nature this branch of study is one of the most interesting and wonderful, and one has only to mention the manner in which the berries of that parasitic shrub, the Mistletoe, are carried by birds, and germinate in the crevices and bark of trees, in support of this latter statement. Instances might be multiplied, but one of the most striking which occurs to me as I write is recorded by Charles Darwin. A ball of clay was taken from the foot of a Red-Legged Partridge—a bird, by the way, which is increasing very prominently in our country—and from this little ball of clay from the foot of a single bird, Darwin actually succeeded in propagating no less than eighty-two plants! This single instance illustrates very forcibly one of the ways in which birds act as distributing agents in Nature, and, beyond this, shows the practical experiments which the great scientist carried out.

The variety of bird life which adds such a charm to our English Summer is, to a great extent,

changed at this season; the swift-winged Swallow and the screeching Swift have departed; the Cuckoo calls no longer from that favourite belt of woodland; and Philomel, with his dark lustrous eyes and enchanting melodies, has crossed by this time many a tempestuous sea to a more congenial clime.

Those tree-top-loving birds, the Chiff Chaff and Willow Wren, are heard no more, although some individuals of the first-named remain in some parts of England throughout the Winter—a recently ascertained and thoroughly authentic fact: but the vacant places of these and other feathered visitors are made up for by the great inrush of birds from northern latitudes and from the great continent of Europe.

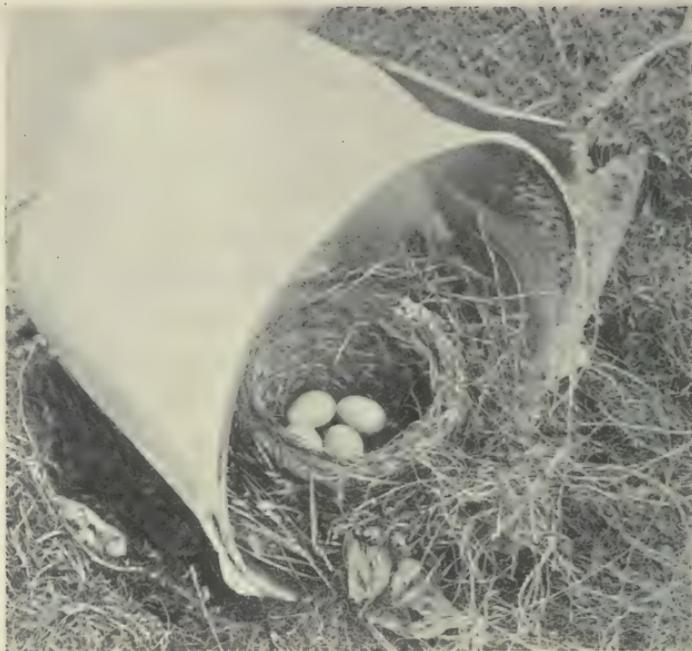
Leave the woodland, and ramble into the more open country; there we may find Golden Plovers in large flocks; Redwings and Fieldfares; Meadow Pipits and Snipe in the moist meadows; Snow Buntings, and on the heaths Twites and Siskins; whilst large additions of Starlings, Rooks, Crows, and Larks are continually arriving on our shores. It seems curious that many of the Larks which are with us during the Autumn and Winter, the Thrushes which visit our gardens and shrubberies, or even the cheery Robin which sings plaintively as he perches on the garden fence, and which bird visitors we thoughtfully befriend in the hour of

need, are not the same individuals which have been resident amongst us during the Summer, but largely foreign immigrants from the Continent or elsewhere!

Most birds carry out migratory movements; many Song Thrushes quit our shores at the end of Summer, to mention only one species, and that favourite Mavis which poured out such liquid notes in the neighbourhood of your garden may, in November, be many, many leagues away in some distant land!

We must not, however, devote the whole of our attention to the birds, and, in our desire to pay them that tribute which is their due, overlook some of the other forms of wild life on a November day. A rustle in the fallen leaves tells that a Mouse or Rabbit is moving, and across the path in front of us a Weasel or Stoat—and, shall we add, a Fox—skips along, not five minutes after we had bade adieu to the gamekeeper and his gun! All three animals must be reckoned amongst his most dreaded enemies, making sad havoc at times with his precious Game, and although he may, and does, keep down the Weasel and Stoat, the Fox he dare not tamper with, or he might, and probably would, be “drummed out” of the county in which such a daring deed had been perpetrated!

Although it is grey November, and the clouds above us are dull and leaden-like, a courageous



Blackbird's Nest and Eggs in Old Bucket.



Wren's Nest in Sack.



Nest and Eggs of Song Thrush.

Red Admiral or Brimstone Butterfly adds pleasing colour and life to the scene before us, whilst on many a bank and through the woodland glade the beautiful fresh green of several Mosses looks strangely out of place as compared with the brown and yellow tints more generally observable. The many species of Fungi and their wonderful colourings must also not be overlooked at this season.

Our last observations in bringing to a conclusion this necessarily restricted survey of November's wild life shall be accorded to the evergreen Ivy and Holly. Well may we sing with Charles Dickens anent the first-named:—

Whole ages have fled and their works decayed,
And nations have scattered been;
But the stout old Ivy shall never fade
From its hale and hearty green.
The brave old plant in its lonely days
Shall fatten upon the past:
For the stateliest building man can raise
Is the Ivy's food at last.

VIII. A DECEMBER RAMBLE

A great many people are of opinion that a field naturalist's calendar of operations commences when the first green flush of Spring is approaching, and ends when the sere and yellow leaves are strewing the paths during Autumntide.

This, however, is not the case, and I know of no more delightful season of the year to be out and about in the country than at the season chosen as the subject for this little sketch.

In December the foliage is off the trees, and many of the woodland-loving birds may be seen to greater advantage than during the season of the year when the leaves hang in such dense festoons as to hide many species from view. And, more than that, at this season birds—and, indeed, many other forms of wild life—seem to be more easily watched and less timorous and shy than during the more favourable periods in Nature's calendar.

What, may I ask, is more enjoyable to the lover of the country than to watch and listen for its tenants during a ramble in December? More especially is this the case when the atmospheric conditions are seasonable—that is, crisp, cold weather—and perchance favoured by bright, invigorating sunshine.

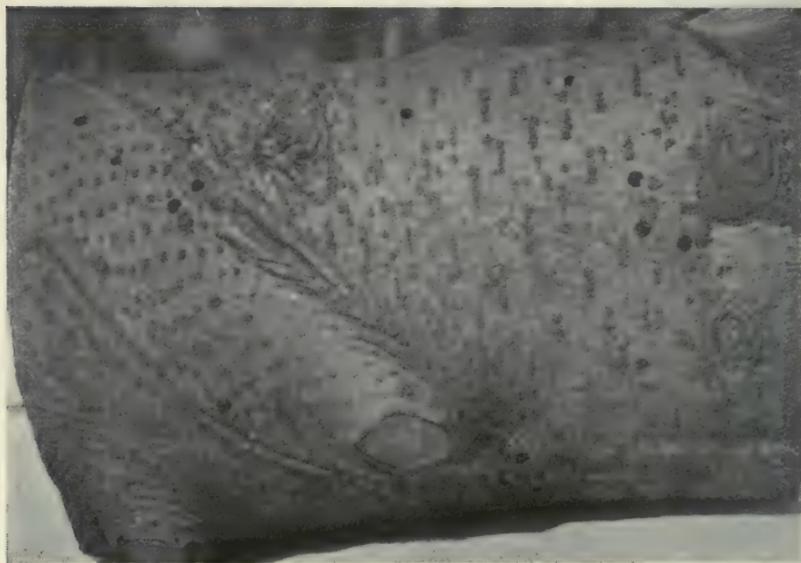
Dr. Dallenger—that able and popular exponent of scientific truths—in a recent lecture which I had the pleasure and profit of hearing him deliver, said: "Sunbeams are bundles of energy"; and so they are. I often think that we too little appreciate the sunshine, but, though we may do so on occasions, certain is it that bright sunshine on a cold Winter's morning is one of the pleasantest



Small White Butterflies.



Butterfly on Marigold.



Holes made in Tree by Insects.

climatic conditions one could possibly wish for, more especially in view of a memorable year of deluge within my recollection.

During December it is enjoyable to ramble through one of the parks of some estimable country gentleman, and there observe and admire a fine herd of Red and Fallow Deer, the former of which are admirably portrayed in the stereo-photograph in this volume.

During the past Summer, by the way, I had the privilege of observing several Kangaroos, some Emus and Cassowaries, and a little colony of Prairie Marmots perfectly free and roaming at liberty in an English park; but they seemed strangely out of their element, and I was certainly of the same opinion as my gamekeeper friend who accompanied me when he observed that a herd of Red or Fallow Deer would be more ornamental to this noble park than the foreign introductions above mentioned!

Rambling across the park, one notices flocks of Rooks, Jackdaws, and Starlings, all harmoniously congregated together; little colonies of ever-increasing Rabbits frolicking and gambolling in the tempting Winter sunlight; whilst a stray Heron or Carrion Crow sailing majestically over the topmost branches of some giant leafless Beech trees adds a note of picturesqueness to the scene before us. On the grass—and especially if

there chance to be a cricket ground, beloved by Earthworms and the like—it is more than probable one may observe several Pied Wagtails running hither and thither in their captivating and engaging manner, picking up a tit-bit here and another there, and then hurrying off in a jerky, undulating flight at the too near approach of a dangerous and questionable field naturalist on the prowl!

If in the vicinity of the park trees abound, there, sure enough, you will get a glance at a cautious Squirrel; or you may watch the short-tailed Nuthatch and listen to the human-like signal to his mate that danger is at hand. Here, too, perchance, the Tree Creeper may be seen scampering in curious, Squirrel-like attitudes round the trunks and branches, or maybe one or more of the three species of British Woodpeckers will please the eye by a sight of their exquisite plumage. At times one may light upon a Woodpecker—the Green and Great Spotted, especially so—in the more open portion of the park-land, but so soon as observed it will hie away in a most curious, jerky flight to the nearest tree and scamper round and round, peering at us as he goes, until well out of danger.

Emerging from the park and passing on down the lane bordering the time-worn oak-fence which encloses the park proper, the palings studded with Mosses and Lichens of many hues, or em-

braced with masses of Dog Rose, Bramble, or Ivy, brings us to a quiet, secluded little village. We had not noticed it as we approached for it was so snugly hidden in the vale. A halt at the old stocks in the centre of the village and an inspection of these relics of past "justice" and torture for law-breakers, and the quiet life of the peaceful little hamlet is rudely awakened by the approach of the hounds, the scarlet-liveried huntsmen, and their noble steeds.

Let us take this little-trodden path by the side of a tall Hawthorn hedgerow and trailing Wild Rose bushes, both bestrewed with their fruits of hips and haws, and put up as we proceed companies of frightened but almost voiceless Chaffinches and Greenfinches; on the stubbles perhaps a covey of Partridges will be disturbed, and on the ploughed lands twittering Skylarks and noisy Meadow Pipits.

Should our ramble lead us by a stream or other piece of water, there one may with patience observe that beautiful British bird which vies in luxury of dress with its fellows from the tropics—the Kingfisher. It is like a feathered meteor, so quick are its movements, as of a lightning flash, and it needs a keen and practised eye to follow it as it dashes along towards the water-worn arch at the far end of the water.

Although it is December, minute Gnats dance

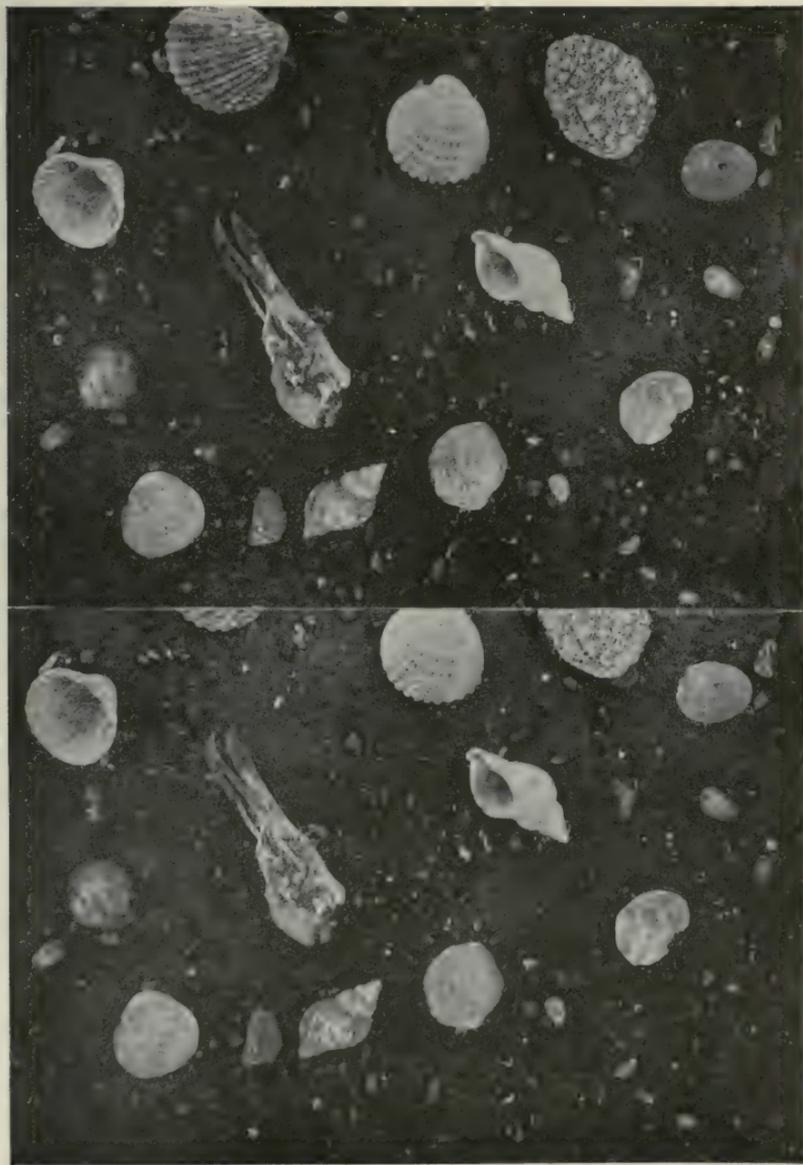
as on gossamer wings over the surface of the stream, and a speckled Trout is actually lured into the belief that the Mayfly season is again upon us!

A Water Vole, so erroneously called and mistaken for a Water Rat, cautiously moves through the dead aquatic herbage, and a "crooing" Moorhen is startled from its hiding-place. Here, too, the Little Grebe, with its many curious antics, may with pleasure be observed, or the Reed Bunting; the last named takes the place at this season of the noisy, imitative Sedge Warbler, which species this particular habitat will not include amongst its feathered tenants until the dawn of another Springtide.

Where the Holly or Mountain Ash is found—laden at this season with bright berries of scarlet—there may be seen quite a feathered gathering. Fieldfares, Redwings, Song and Mistle Thrushes, Blackbirds, and other avine tenants of the countryside are enjoying a regal feast indeed!

Flitting on the topmost branches of the sunlit hedgerow, the Yellow Bunting may be noticed in his exquisite green and yellow dress, and nowadays one notes, too, with pleasure the noticeable increase in the numbers of that sprightly and entertaining bird, the Goldfinch.

Passing by a cottage garden a pair of Wrens on the bare branches of an overhanging tree afford



Debris from the Seashore.

us an excellent opportunity of a snap-shot with the camera. At all seasons of the year this diminutive bird is interesting in its Mouse-like habits, but at this particular season it is doubly so, for the reason that the leaflessness and bareness of the countryside permits us to more closely follow its engaging and restless habits. Let the day be ever so cold and frosty, the wind and air biting in its crispness and severity, this little morsel of a feathered being will make the welkin ring again and again with its full blast of song, which startles a Song Thrush perched on the naked branches of an Oak tree and makes him pour out in stern competition his liquid and varied notes.

We will hie away to the woodland in concluding our December ramble, passing the stackyard as we go, and noticing the noisy, cosmopolitan Sparrows, the various species of Buntings, and other feathered creatures here congregated.

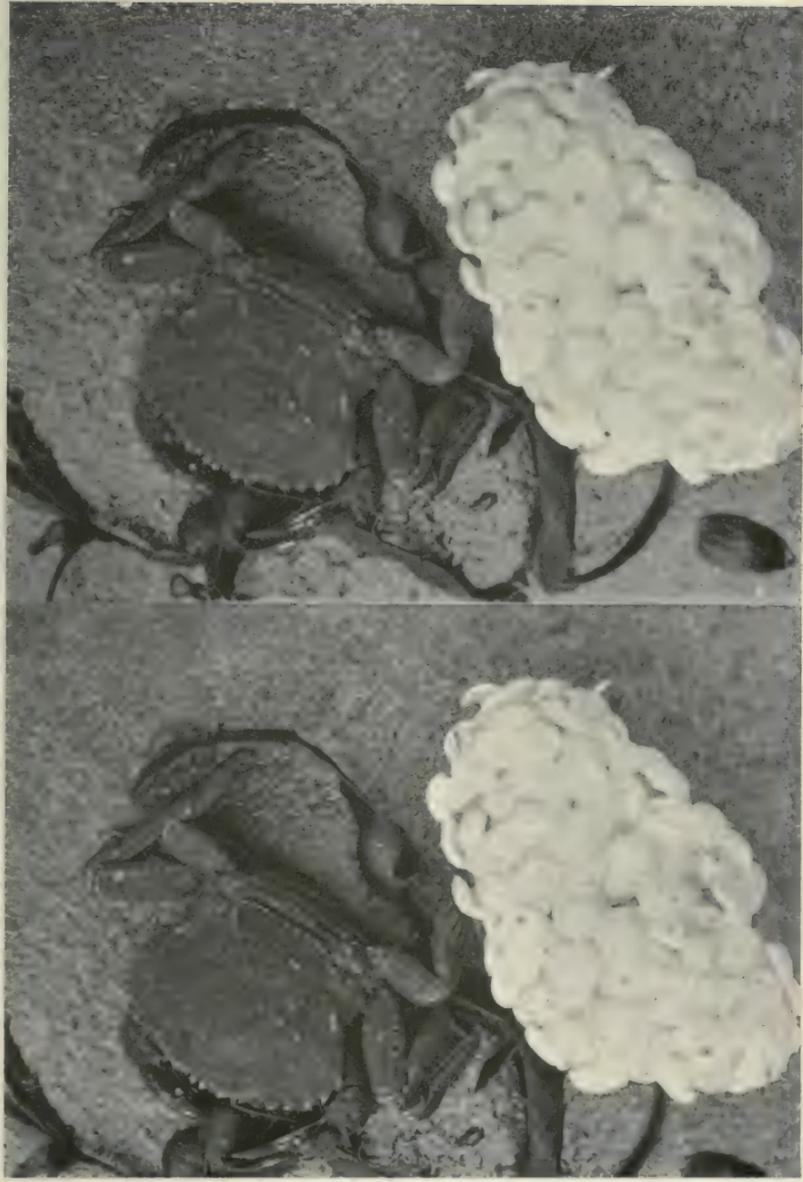
Arriving at the woodland, the whole place seems tenanted by various species of Titmice, prominent amongst which is the Blue Tit, because of the constancy and continuity of its cheery little voice. The sibilous chattering on our right proceeds from a small company of Long-tailed Tits—mere balls of feathers, with exceptionally long tails—whilst through the Bracken and over the dead leaves scampers an agile Stoat, or, with measured foot-

falls, a wary Fox, a restless Field Mouse, or other wild tenant of this woodland glade.

Peering through an opening in the trees on to the field adjoining, our prism glasses enable us to perceive several Hares, but our attention is soon distracted therefrom, for a noisy Ring Dove is abruptly startled from its hiding-place in the sombre Firs; a Sparrow Hawk pitches on a tree directly in front of us; a Robin perches on a naked Hazel stem; and barely a pace or two away a Hedge Sparrow takes up his station, and both species vie with each other in song, and utter pleasing competitive lays as we depart from the woodland during the fast coming of the gloaming hour.

IX. THE WARS OF THE ROSES

It happened like this. Smith and Brown were greatly fond of their gardens, and vied with each other as to which could grow the finest floral treasures. The competition between these two budding amateurs came to such a pitch that both decided to give up a considerable portion of their gardens to Rose-growing, and The Wars of the Roses were in an embryo stage. That Summer Smith and Brown attended the Temple Rose Show, and, notebooks in hand, examined with loving and critical eyes the great variety of Roses there displayed. They did not visit the Show in



Shore Crab and Egg Cluster of Whelk.

company with each other. One went in the morning, and the other in the afternoon. It came about, therefore, that the list of varieties which each made up as a result of their visits to the far-famed Rose Show differed considerably, and The Wars of the Roses had entered upon their second stage. The plot had been hatched, and the machinery was now being set in motion.

Both met after visiting the Show, giving each other their opinions, but jealously refusing to divulge the actual list of varieties of Roses chosen!

There was no doubt about it, Smith and Brown had caught the Rose fever, and had got the complaint rather acutely. All they could talk of was Roses; it was Roses, Roses, Roses, all the way.

Ardent politicians at normal times, Smith and Brown discarded the political arena when the first signs of the Rose fever made itself felt. It reminds me of that excellent little tale, so admirably told, by the Rev. Foster-Melliard in his delightful *Book of the Rose*, and the incident is worth recalling here. On a dull, bleak day in January, a small shooting party met for Partridge-driving. Amongst the "guns" were two gentlemen who lived some distance from one another, and did not, as a consequence, meet very often. During the driving, it was noticed that these two "guns" were continually talking with great gusto, ever and anon cutting pieces from the hedgerow and

comparing notes. So much was this pursued, that—fond of sport as they both were—on more than one occasion the Partridges passed them unheeded. Said the host later on to one of his friends, “What on earth do you think A and B, who are generally so keen, had got of such importance to talk about together? It was all about Roses!”

And so it was with Smith and Brown, only more so. At work, and away from work, the Wars of the Roses waged fast and furious. People remarked upon the great friendship of the two budding rosarians. Many who were not “in the know” could not for the life of them understand their animated conversations, and whatever it all meant! Various Rose-gardens in the neighbourhood were visited by Smith and Brown, the local nurserymen were pestered to distraction point by the frequency of the visits paid to them; the Rose fever was entering on a very acute stage of development.

At last, the Summer being on the wane, the order for the trees was made up and despatched to a well-known firm. Even this was not agreed upon without great deliberation and much discussion. Whilst one contended that such a firm was the most reliable, the other negatived the contentions as ridiculous! However, at last they agreed, and the order was despatched, with strict instructions

that none of the Teas or Hybrid Teas were to be on Manetti stock, and no substitutes allowed!

Patiently the combatants waited for chill October—and the Rose trees. They were, however, not idle in the meantime, setting to work to prepare the soil for the treasures to come. They dug often, and they dug deeply, two important facts which all who till the soil might take to heart with advantage.

At last the trees arrived! What excitement there was in unpacking something over three hundred trees. What notes were made, and what comments were passed as to the dead and fading blossoms on the trees, the general appearance, and the prospects of success during the next Summer!

And the planting! Oh! what a business! Suffice it to say, the trees were all carefully planted, roots well spread out, like a Spider's legs, and all the best advice of Melliar, Jekyll, Hole, and other Rosarians carried out to the letter. Although both Smith and Brown are great adherents of Free Trade in the general acceptance of the meaning thereof, they are great believers in Protection, so far as that much-maligned word concerns Rose trees! The neighbouring woodlands were scoured for Bracken and dead leaves wherewith to shelter the tender trees from the frost, snow, and cold winds. This accomplished, each patiently waited

for the advent of the balmy Springtime. The protection—or what was left of it—was removed in March, in spite of its many-weathers; a few weeks later the Rose trees were pruned, and the Wars of the Roses began in grim earnest.

Silently the trees put on the green flush of Spring, and as silently, but as surely, the amazing Aphis made its unwelcome appearance. The Wars of the Roses and the Wars of the Aphis! No quassia chips or insecticides for Smith and Brown. They employed the “finger and thumb” method of keeping down the detestable Green Fly, and, I must admit, that cleaner or healthier trees I never saw.

Then the weather! Never before had Smith and Brown been so interested in the meteorological conditions of the countryside. They knew when the wind was North and South, when it was East, and when it was West! They were intimately acquainted with the amount of the rainfall, and the registered amount of sunshine. They were human barometers!

At last the buds appeared, and one fine day in April Smith made his *début* with as fine a *Gloire de Dijon* as ever graced a banqueting table. What democrats flowers are! The aristocrat can—under his stately house of glass—produce the inimitable *Marechal Niel*, but the poor man can prove the democratic character of flowers by the great

beauty of his cottage garden from April to October.

But we are forgetting Smith and Brown! Brown—on seeing Smith's Gloire de Dijon—waxed indignant. He would not admit it was in any way other than an ordinary bloom, but Smith pursued the even tenor of his way. Brown's Gloiries came and faded. April had passed and blossomed into May. June, sunny June, was fast approaching. The Wars of the Roses were coming to a climax.

The weather had been the reverse of pleasant for rosarians. Daily did Smith and Brown go their rounds, and note the progress of their treasures. At last, one fine bright day, and then the gloaming. Night cast its shadows upon the gardens of our two heroes, and daylight dawned again. What a transformation scene! Overnight, buds upon the trees; next morning, fine open blossoms here, there, and everywhere! Smith knew not where to let his eyes rest first; Brown was the same. Smith prided himself on his Madame Pernet Ducher; Brown exhibited great pride at his White Maman Cochet! Blows had been struck, the artillery was at work; the Wars of the Roses were raging! Smith readily agreed that Brown's White Maman Cochet blooms were of the best, but, said he, "Look at its habit. It hangs its head, the blossoms almost trail along

the ground, and the Rose is most undecorative. You must not, my dear sir, judge a Rose by a specimen bloom. You must take into account the habit of the tree, its stately character, its decorative effect, its foliage."

Then came Smith with his beautiful sweet-scented silvery-pink blooms of La France, and Brown followed with Mrs. Sharman Crawford, the finest pink Rose—so Brown said—ever grown! That Rose of pearly whiteness, Frau Karl Druschki, next came into blossom in Brown's rosary. This maddened Smith to distraction almost, for he hadn't Frau Karl in his collection. He possessed, however, the Hon. Edith Gifford, but the first blooms came badly, and he had to admit defeat. Excitedly and anxiously he watched the Duchess of Portland—the Rose tree, of course, not the charming Duchess herself—Souvenir de Pierre Notting, Anna Olivier, and The Bride. The latter—as was fit—was the first to show herself, and the initial blossom was a beauty. This time Smith scored, for Brown hadn't a Bride!

And so the Wars of the Roses continued. Then came the reds. First Liberty, glowing like a ball of fire in the June sunlight, and especially towards evening. Then Ulrich Brunner, with her rich scarlet blossoms, followed by Gustave Piganeau, Gruss an Teplitz, and others.

"Go where you will," said Brown one morning,

“you can’t beat Mrs. John Laing.” “I beg your pardon, sir,” retorted Smith, “give me Caroline Testout. There is a delicious pink. None of your shallow blossom about her, full and beautiful. And if she doesn’t captivate you, here is Killarney. There is shading for you; there are beautiful imbrications” (Brown thought at first his friend meant embrocation, as he hadn’t yet mastered the glossary of Rose language), “and, withal, a splendid upright habit.” Brown admitted his friend’s praises of Killarney were not oversung.

The June sunshine shone on, and with it came the first blossoms of Viscountess Folkestone, in Smith’s garden, and Madame Abel Chatenay in Brown’s. Another war ensued, and, eventually, it was agreed that Madame Chatenay had gained the day. Coming to the darker roses, Smith had Fisher Holmes and Prince Camille de Rohan; but Brown prided himself on Rodocanachi and Prince Arthur. It was agreed a tie!

Then came the whites again. Merveille de Lyon and Innocente Pirola battled one against the other, and these were joined later by the exquisite golden of William Allan Richardson. Brown had the latter, and wouldn’t hear a word against it, but Smith produced Madame Pierre Cochet with intense pride, and it was pronounced a deeper golden in colour, and even better in the bud than her better-known relative.

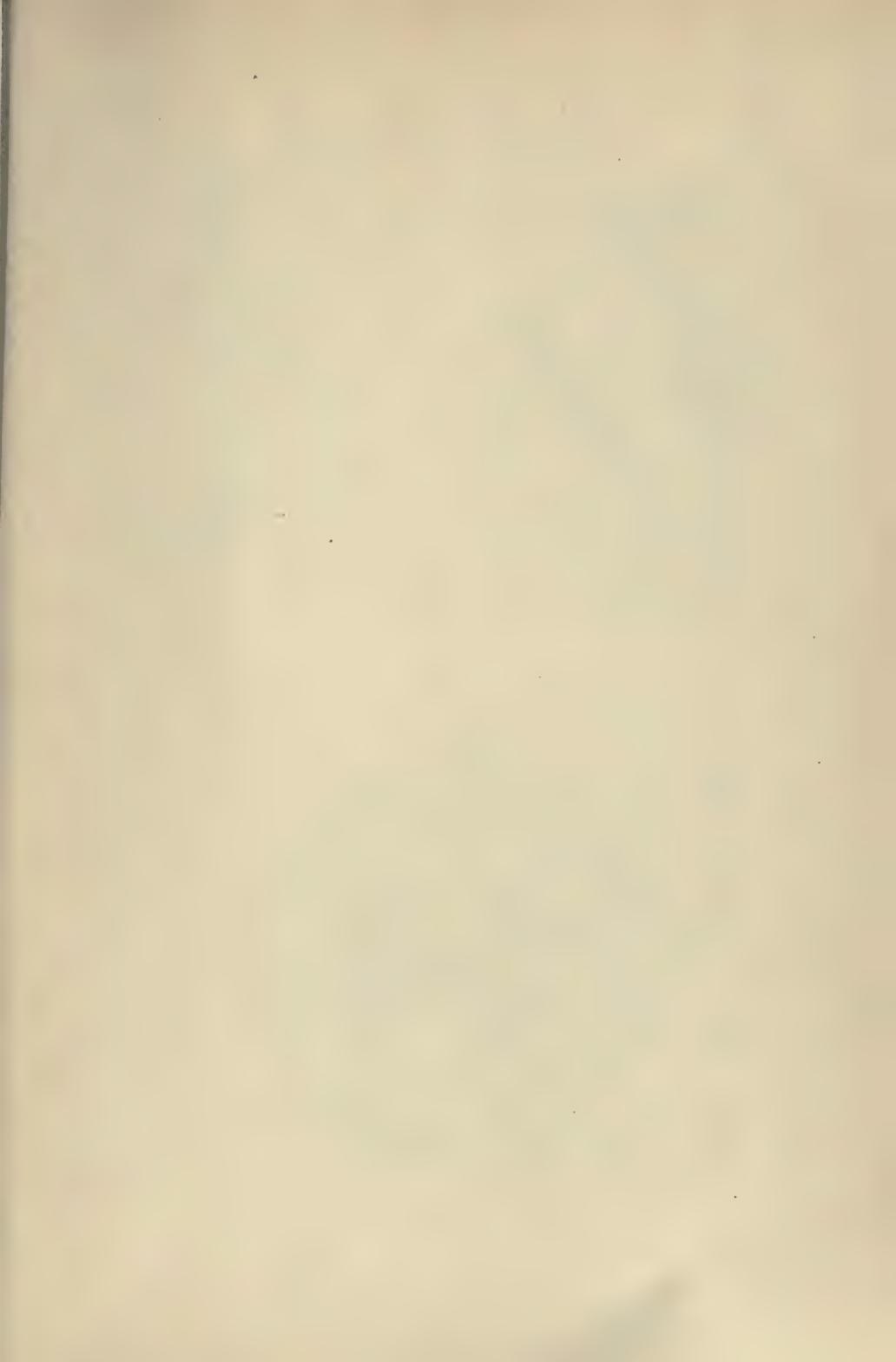
And so the Wars of the Roses continued all through the Summer, first with one variety, and then with another.

Smith and Brown are still amongst their Roses, the Rose fever is still throbbing through their veins, and their friends are wondering how and when it will all end.

X. BOYS I HAVE MET

There are some people I know who never seem happier than when finding fault with the work of both sections of the London County Council. I, in my own little way, have for long come to regard the work of that excellent body of public representatives as of a very able character. In this respect I have been particularly interested as a naturalist and a lover of the country in the great and increasing number of "lungs" or open spaces the County Council have added to the great Metropolis.

It was not until recently, however, that I was fortunate enough to be brought into close touch with another very important phase of the London County Council's work, namely, the educational side, and more particularly as regards its industrial school system. To those morbid pessimists I had in mind when writing my opening sentence I commend the most praiseworthy efforts the





Larva and Pupa of Black Hairstreak.



Emperor Pupa.



Black Hairstreak Butterfly.

Council have been, and are still, making to rescue the poorer boys of London from their homes of sin, immorality, and drunkenness; and if these anti-friends of the County Council would spend (as I have done) a day or two in one of these industrial homes among the Surrey hills, I vouchsafe to say they would hold a very high opinion indeed as to the splendid work accomplished by the Council.

I feel so keenly delighted with the work the London County Council is doing in regard to these industrial schools as a result of my practical acquaintance with the methods and aims adopted, that I wish to put on record my humble tribute for such ennobling work.

Having been invited to lecture on Nature Study to 180 of Britain's sons at one of the Council's industrial schools, I was afforded not only the privilege of pointing out to the marshalled, well-groomed, and appreciative youngsters before me some of the wonders of Nature's wonderful children, and so doing a trifle to help forward the good educational movement now being inculcated and fostered in many schools in our country, but I was also enabled to spend the greater part of a week-end in and around the school and become, as it were, one of the inmates thereof.

The great point which strikes an outsider in the sacred precincts of an industrial school such as I visited is the supreme happiness and content-

ment of these rescued children from slumland. Yet, on closer inquiry, one comes to the conclusion that there is no single reason why such happiness and contentment should not reign supreme, for if kind and sympathetic officials, good wholesome food—and enough of it—pure air, excellent hygiene, a first-rate school, sports (indoors and out), a swimming bath, music, etc., do not tend to make these young sons of Britain happy and comfortable, what then on this earth will?

The greater portion of the work of the little colony is performed by the boys themselves, else how could the school claim its connection with industry? The boys make their own boots and shoes, tailor their own clothes, do all the farm work under the superintendence of a bailiff, scrub the floors and tables, turn out woodwork with the skill of a trained carpenter, and other good and useful work that need not be detailed.

The boys range in size and age. Unconsciously you tumble across a tiny tot of nine summers, the little chap looking supremely happy and at peace with all the world. Usually each boy finishes his training at about sixteen years of age, but cases of where boys have left for situations but have misbehaved themselves and been brought back to school are not infrequent, and other circumstances sometimes result in the old home seeing some of the boys nearly out of their teens before

they say good-bye to the scenes of their childhood. Each boy on leaving has a trade at his finger-ends. Situations are found for the industrious human tenants of this wonderful beehive on farms in Wales and Canada, as bootmakers, carpenters, tailors, and cooks, or to serve King and country in the Army or Navy.

The present cook—and I can testify to the excellence of his dishes—tells the visitor with evident pride that he is an old boy. Now he is a fine, tall, handsome fellow, lives in a delightful cottage in the grounds with a devoted wife and family, and has around him several boys training to become cooks and to accept situations as such when they have served their apprenticeship. I hardly know what to single out for special mention from the mass of interesting things I saw and heard during this pleasant week-end. Whether I watched “Farmer Giles”—a braw, wee laddie of about thirteen years of age—at his farm work, feeding the pigs, or leading the well-groomed horse; the lovers of the willow sporting for their very lives on the green sward, batting, bowling, and fielding with a brilliancy that would do credit to many large public schools where coaches are engaged; the discipline of the whole company at drill or at meals; the busy cobblers, tailors, and carpenters; the laundry boys: each and all could not fail to interest the most indifferent looker-on.

The boys rise at 6 a.m. week days, and at 7 a.m. on Sundays. They are in bed soon after 8 p.m. Visiting days for parents and relatives are the first Monday in January, April, July, and October. Letters are answered fortnightly by the boys if stamped addressed envelopes are supplied by their friends. It seems unkind to contemplate, but it is nevertheless a fact, that many of these "relatives and friends" do not seem to trouble about the boys until they have reached a wage-earning age, and then they are most solicitous as to their welfare! I was told of one case where a parent wrote to a boy because he had reached an age when perchance he might be earning a trifle, and the boy had been dead and buried four or five years! No church is at present attached to the school, but the boys march to church once a month. Services are held *every Sunday at the school*, and prayers said *every evening*.

Any music, did you say? Here there is as fine a boys' band as one could wish to listen to. Being the Sabbath we were treated to a classical piece—a selection from "Faust"—and the fine tone, the precision, and the enthusiasm of the whole of the band boys will not be readily effaced from my memory. Little imps no higher than a table armed with kettle drums, euphoniums, double bass, piccolos and flutes, cornets, clarionets, and not forgetting the drummer boy, with his left arm

broken and in a sling—verily it was a sight to bring tears to one's eyes when one realised that out of the raw material such harmony, such feeling, such expression, had been manufactured.

Singing? Rather! Just watch those boys standing sphinx-like before meals: eyes closed, hands clasped. The leader starts, and then one listens to the simple, yet effective, grace being sung. Trebles, altos, tenors, basses, all combine harmoniously together and produce a striking effect indeed. And one is not only impressed with the beauty of the singing, but the honest look upon each boy's face as, with head uplifted, he sings praises for the meal about to be taken. And such meals!

Breakfast.—Good wholesome bread and butter, an egg (being Sunday), and a good tin of tea, smoking hot.

Dinner.—Cold roast beef, baked potatoes, and bread; stewed rhubarb, the latter grown on the farm.

Tea.—Bread and butter, tea, currant cake.

The dormitories! Models of neatness and cleanliness. Fifty beds in each dormitory, a master's bedroom looking on to each, and a reflected light from his room does away with any naked or other light being used in the dormitory itself.

The boys receive three hours schooling a day; the rest of the time being spent in the workshops,

on the farm, the band room, gymnasium, or playground. I must mention the fire brigade drill and the washing troughs. Twice a day each boy strips to the waist, and it is an entertaining sight to see the youngsters simply revelling in the pure water, not forgetting also tooth-brush drill.

Naturally, to keep all this machinery in motion there must be an engineer-in-chief. Such a one is the superintendent, and his practical help-mate, the matron. To their credit, be it said, the sick room had no occupants at the time of my visit, and they have—as, indeed, they must—the care of their large family at heart, and are constantly planning and scheming whereby they may make the lives of these sons of Britain brighter, nobler, and more useful.

XI. THE CUCKOO MEADOW

It is really wonderful what a wealth of wild life may be seen and heard in a meadow. At all seasons of the year it is a remarkable place, but when the Spring and Summer wild flowers appear, then indeed it is a pleasant environment in which to pass the sunlit hours.

There is a meadow that I know where the Cuckoo flower grows in great profusion as well as many other wild plants worthy of notice. How happy the hours are when spent in Cuckoo



Two River Cray-fish Fighting.



White Limy Tube of a Marine Bristle Worm.



Shells of Fresh-Water Snails.

Meadow; what delightful scenes one remembers having participated in, and what a really interesting and jolly place a meadow is.

This Cuckoo Meadow that I write of is situated in homely Hertfordshire, and not long since a party of seventy happy school boys and girls accompanied me on a ramble there, noting the wild plants and animals, learning their names, the life they lead, and their uses. We had among us a Nature lover of the old school, one who has spent pleasant and profitable hours in Cuckoo Meadow, and he has been kind enough to write down some of his thoughts for publication in this book. Here are my friend's charming verses:—

THE CUCKOO MEADOW

I know a meadow where the Cuckoo grows,
The sweet musk-scented Cowslip too,
The slender Violet, and the blue
Meek-eyed Forget-me-not and pale Primrose.

Where Daisies, with pink-tinted halos, peep
The rich turf carpet depths among,
Where Crickets chirp their matin song
And Insect-denizens their revels keep.

Where Quaking Grasses quiver in the air
And pale Anemones abound,
Where clusters of Bluebells are found,
With flaming Buttercups and "Milkmaids" fair.

Where waving plumes of dainty Meadow Sweet
Bend stately to the Summer breeze,
Where grows the graceful Wild Heart's-ease,
And gay Convolvulus twines round your feet.

The high Hedgerows and Bramble-covered bank
With Canker-roses, red and white,
And Honeysuckle bloom are bright,
While round the pond grow Rushes tall and dank.

The prim Harebell and Dandelion gay
Are there, with " Bird's-eyes " gauzy-blue
And the humble " Buckle-my-shoe,"
And bright-winged Moths flit through the Summer day.

Where every step is bathed in gorgeous hues,
And all around the air is filled
With song, and sweet perfume, distilled
From Thyme-clad banks in early morning dews.

'Tis there I love, beneath a shady Oak,
To lay me down and try to read,
From natives of this flowery mead,
The secrets written there in Nature's book





Puss Moth.

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Note.—To facilitate easy reference, the names of animals and plants are printed in ordinary type, italics being used for sectional headings and other data. Many animals and plants are dealt with in the text under these sectional headings which were found to be so numerous as to preclude separate indexing. To these careful reference should be made.

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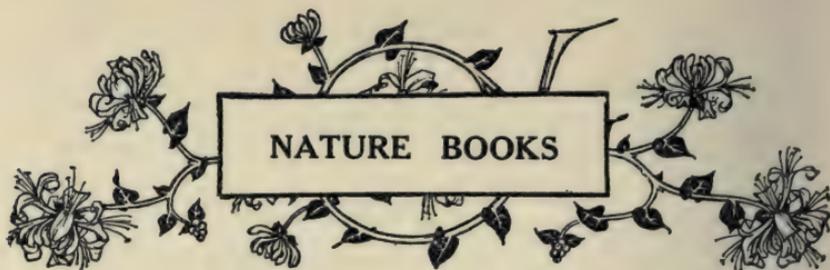
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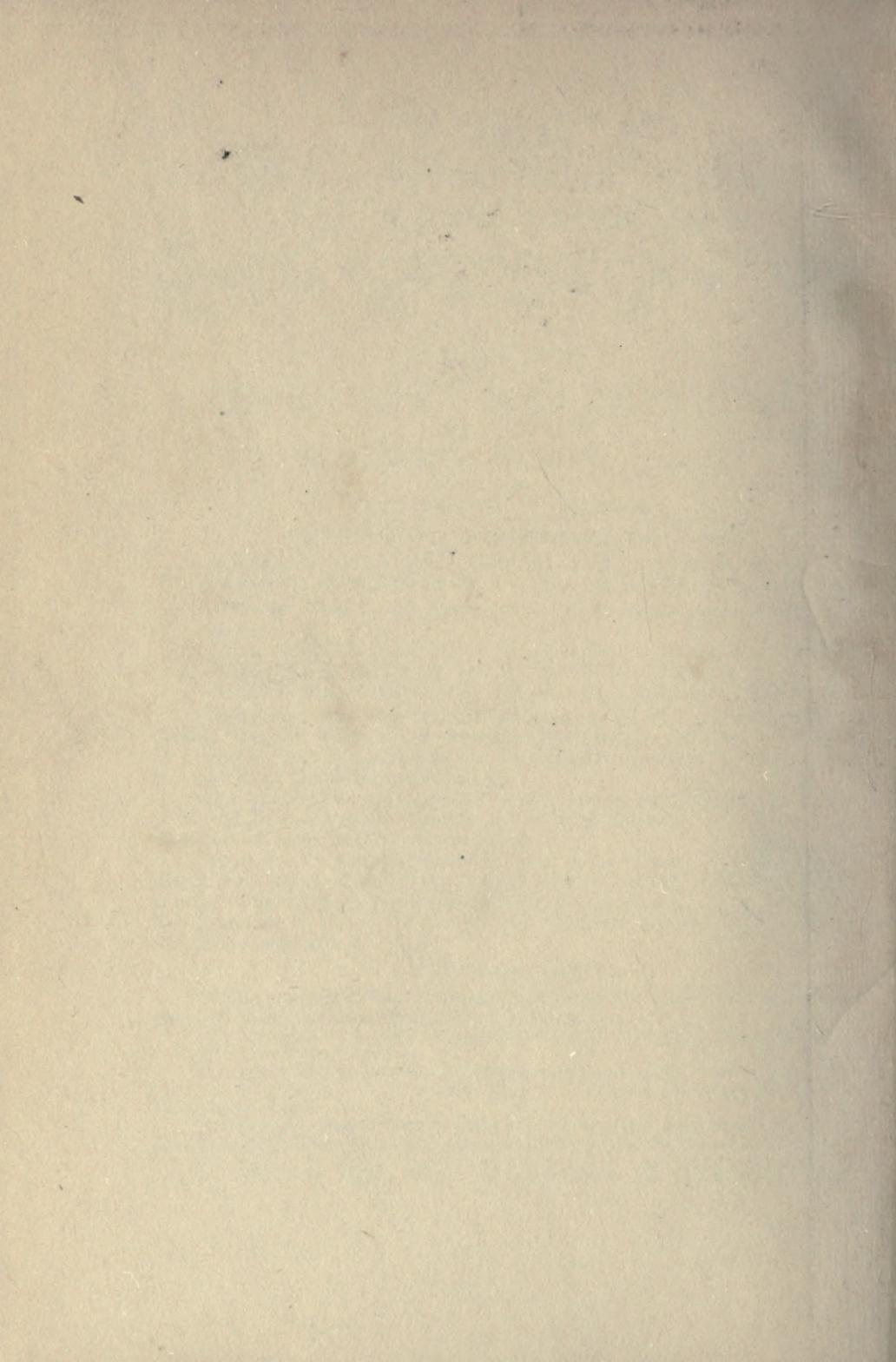
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