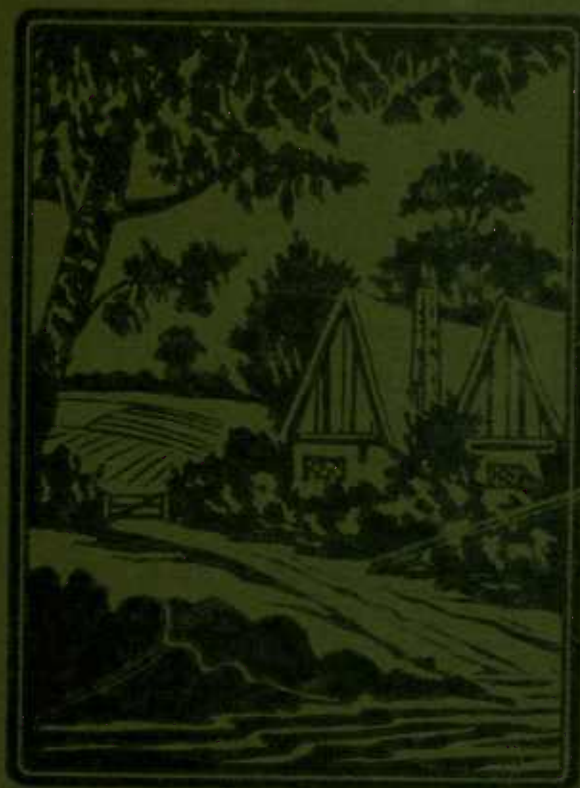
BRITISH COUNTRY LIFE

IN SPRING & SUMMER



EDITED BY
EDWARD THOMAS

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THE BOOK OF THE
OPEN AIR

MAY BLOSSOMS.

From a water-colour by
W. Tatton Winter, R.B.A.

BRITISH COUNTRY LIFE

IN SPRING AND SUMMER

THE BOOK OF THE OPEN AIR EDITED BY

EDWARD THOMAS

Author of '*Horæ Solitairæ*,' 'Oxford,' 'Beautiful Wales,'
'The Heart of England,' and Editor of 'The
Pocket Book of Poems and Songs
for the Open Air'

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OPEN-AIR DIARY

APRIL

DATE

1 Red-backed shrikes appear.

2 Toothwort under elms. Chaffinches still in flocks.

3 Queen wasps. Red deer shed their horns.

4 Flowers of hedge-mustard, butterbur, pear tree. Ring-ousels arrive. Starlings build. Rolling hayfield after brushing it.

5 Sowing barley. Box-tree flowers. Mullein moth. Whinchat arrives. Lapwing's eggs.

6 Willow wrens arrive and wood sorrel flowers. Hawthorns full of leaf. Blackthorn flowers. Horse chestnut leaves.

7 Ash tree flowers. Hazel leaves. Flowers of birch. Redstart arrives.

8 Bluebell flowers. Wild ducks lay.

9 Black-cap sings. Wych-elm flowers. Wood strawberry and field madder flower.

10 Flowers of herb Robert, cherry, early purple orchis.

11 Barn-owl's eggs. Flowers of marsh violet, greater stitchwort, red currant, juniper.

12 Cuckoo sings. House-martin arrives. Young rooks and thrushes.

13 Swallows and sand-martins arrive. Moorhens lay. Starlings lay. Flowers of blackthorn, gooseberry, spring water starwort, woodruff, thrift, grey field speedwell.

14 Leaves of moneywort, stitchwort, dog violet, garlic-mustard and wild parsley strong and tall. Flowers of golden saxifrage, alexanders, field scorpion grass. Brindled beauty moth. Lesser whitethroat arrives. Stone curlews lay.

15 Long-tailed titmouse's nest finished. Whitethroat arrives. Nightingale sings. Young squirrels. Purple orchis and lesser periwinkle flowers.

16 Chaffinch builds. White-throats arrive. Young kingfishers abroad. Golden plover's eggs. Wild cherry flowers. Beech leaves.

17 Birch leaves. Pear flowers. Goldcrest lays. Yellowhammer builds. Putting up hop poles. Flowers of arum.

18 Dabchick lays. Reed warbler arrives. Plum flowers. Flowers of dwarf red rattle.

19 Hurdle making. Snipe's eggs. The trilling songs of long-tailed and blue tits abound high in the trees. Red-rattle and bugle flower.

20 Blackcap sings. Bullfinch builds. Young weasels. Small copper butterflies appear. Flowers of wild service tree. Sycamore leaves.

21 Water crowfoot flowers. Lime leaves. Skylark's eggs. Emperor moth.

22 Coots lay. Wryneck's eggs. Young red deer. Flowers of green field speedwell and meadow grass.

23 Ash leaves. Barred woodpecker's eggs. Sedge-warbler sings. Young field-voles.

24 Chaffinches lay. Green woodpecker's eggs. Frosted green moth. Wall speedwell flowers.

25 Dandelion masses at their best. Flowers of white meadow saxifrage. Wrens build. Dragon-flies abroad.

26 Grasshopper warbler heard. Tree pipits arrive. Jackdaw's eggs. Flowers of germander speedwell and meadow foxtail grass.

27 Turtle doves coo. Garden warbler arrives.

28 Orange-tip butterflies abound. Curlew's eggs. Flowers of medlar and whortle-berry.

29 Jay's eggs. Sandpiper arrives. Oak flowers.

30 Beech and sycamore in leaf. Hawthorn flowers—there is never a year when a small bunch of may on May-day is impossible.

MAY

DATE	
1	May garlands of hawthorn, cowslip, bluebell, purple orchis, primrose, stitchwort, cuckoo flower, marigold. Hops make their first circle round poles. Ring-ousel singing. Yellow-hammer's eggs. Red-backed shrike appears. Small heath butterflies appear.
2	Noctule bats begin to fly. Willow wren's eggs. Orange-tip butterflies first seen. Scorpion grass, charlock, common scurvy grass flowers. Coltsfoot down abounds—for the linnet's nest.
3	Bullfinch lays. Whinchat builds. Dotterels arrive. Maple flowers. Flowers of field pepperwort, heartsease, bog stitchwort, thyme-leaved speedwell, common speedwell, reed manna grass.
4	Lesser whitethroat builds. Greenfinch lays. Cirl bunting's eggs. Walnut leaves. Young stoats born. Flowers of greater celandine, common fumitory, sea purslane, fritillary.
5	Swifts arrive. Reed-bunting lays. Sedge warbler sings. Linnets lay. Pale tussock moth. Flowers of ramping fumitory, water-cress, common winter cress, starry tower mustard, chalk milkwort, mud water star-wort, small marsh valerian, great wood rush.
6	Linnets come in bands to the dandelion seeds. Flycatcher arrives. Kestrel's eggs. Young wild ducks. Marshes—Whimbrel and summer snipe here for a day or two. Yellow wagtails, snipe, redshanks, black-headed gulls, pewits, coots, moorhens and reed buntings, with eggs. Ribwort plantain flowers.
7	Blue titmice lay. Cuckoo's egg. Horse-chestnut flowers. Flowers of sweet gale and beech. Wood tiger moth.
8	Blackcaps' eggs. Treecreepers' eggs. Quail arrives. Flowers of barren strawberry, tormentil, lady's mantle, white beam, mossy saxifrage, marsh pennywort, corn gromwell
9	Rock pipits build. Red-backed shrikes build. Ringed plovers' eggs. Flowers of mountain ash, crabtree.
10	Sedge-warblers and whinchats laying. Sparrow hawks' eggs. Dingy skipper butterflies appear. Flowers of creeping cinquefoil, sweet vernal grass.
11	Dragon-flies seen. Humming-bird hawk moth. Corn-bunting builds. Trailing Tormentil flowers.
12	Young water-shrews. Angle-shades moth. Flowers of water avens, mouse-ear hawk-weed, sweet chestnut.
13	Flowers of herb Robert, goutweed, pig-nut, common beaked parsley, crosswort, lily of the valley, rye grass. Whitethroat lays.

DATE	
14	Bird's foot trefoil, oak, comfrey, silverweed flowers. Young dormice. Marsh fritillary butterflies appear. Bullfinch lays.
15	Young otters abroad. Wren's eggs. Flowers of marsh cinquefoil, sweet cicely, eyebright, branched bur-reed, Timothy grass.
16	Flowers of broad-leaved garlic, milkwort, raspberry, lamb's lettuce, yellow iris. Young water-voles abroad.
17	Flowers of barberry, whitebeam, wild service, bramble, forget-me-not. Common blue butterflies appear. Young red deer.
18	Wood sanicle, ragged robin, broom, rest harrow, spotted medick, sweet brier flowers.
19	Swarm of bees. Avens, figwort, cromwell, mouse-ear scorpion grass flowers. Swallow-tail butterflies hatched. Common carpet moth.
20	Young moles born. Knot grass moth. Flowers of holly, buckthorn, sycamore, burnet rose, white bryony, greater plantain.
21	Meadow cranesbill, white campion, harebell, goose-grass, tormentil, brooklime.
22	Young hares. Oak egger moth, purple thorn moth. Needle whin, wayfaring tree flowers.
23	Green hairstreak butterflies appear. Sand-piper's eggs. Maple flowers.
24	Forget-me-not, white bryony, water blinks flowers.
25	Green-veined white butterflies hatched. Forester moth, common heath butterfly. Flowers of wood loosestrife, scarlet pimpernel, bogbean, marsh redrattle, white dead nettle, green-winged meadow orchis.
26	Pearl-bordered fritillary butterflies appear. Red-belted clear-wing moth, clouded wave. Flowers of agrimony, comfrey, great broom rape, red dead nettle, common sorrel flowers.
27	Wall butterflies appear. Hairy tare, bush vetch, narrow-leaved vetch, meadow vetch-ling, bird-cherry, sheep's sorrel flowers.
28	Young whitethroats. Dotterel's eggs. One young red stag still carrying its antlers. Flowers of common Solomon's seal. Duke of Burgundy fritillary butterflies appear.
29	Flowers of herb bennet, honeysuckle, avens, corn gromwell, broad-leaved garlic. Small blue butterflies appear. Corn-bunting's eggs.
30	Young harvest mice. Small pearl-bordered fritillary butterflies appear. Wood melic-grass flowering. First reed-warblers' egg.
31	May fly. Garden warbler lays. Flowers of white bryony, mullein, viper's bugloss, penny cress, wood sage, creeping water scorpion grass, yellow dead nettle, bugle, crowberry, spider orchis.

JUNE

DATE

1 Flowers of ragged robin, sainfoin, watercress, ladysmock, fly orchis. Buff-tip moth. Red-shank's eggs.

2 Young badgers abroad. Puss moth, cabbage moth.

3 Flowers of green-man orchis, cistus, cinquefoil, mignonette, red and white campions, fumitory, heartsease, eyebright, poppy.

4 Common emerald moth, small white wave, single-dotted wave, small fan-footed wave. Flowers of common cotton grass.

5 Male ghost-moths dance. Common wainscot moth. First wild rose.

6 Meadow-brown butterflies appear. Flame moth. Flowers of wild sage, great nettle, common pellitory of the wall.

7 Yarrow, elder, hemlock, lesser convolvulus, common mallow, bramble, white water-lily, common poppy, yellow Welsh poppy flowers. Painted lady butterflies.

8 Spindle tree flowers. Six-spotted burnet moth, gray birch.

9 Air full of floating poplar down. Nightjar's eggs. Dogwood flowers. Beautiful yellow underwing moth. Yellow horned poppy, twisted whitlow grass, corn spurrey, pennywort, wood sanicle, yellow rattle, yellow cow wheat, ground ivy, hoary plantain, sharp dock, twayblade flowers.

10 Vervain, self-heal, common willow, nipplewort, biting stonecrop, wild celery flowers. Large skipper butterflies appear.

11 Borage, deadly nightshade, common pink, bladder campion flowers. Large yellow underwing moth.

12 Young weasels. Obscure wainscot moth. Flowers of dropwort, wall hawkweed, water violet, small bugloss. The least blue dragon-flies abound, like marsh lights, among rushes and flags.

13 Lappet moth, broad-bordered yellow underwing. Flowers of milkwort, evening campion, scented agrimony, salad burnet, stinking chamomile, yellow oxeye, corn feverfew, oxeye daisy, wild chamomile. Black knapweed, smooth hawk's beard, cranberry, privet, man orchis, bee orchis

14 Flowers of orchis militaris, birds' nest orchis, crimson marsh orchis, red spur valerian, ling, red bartsia, crow garlic, couch grass, meadow barley, wall barley. Gothic moth.

15 Sheepshearing. Families of bullfinches abroad. Flowers of hop trefoil, lady's fingers, birdsfoot, sainfoin, inelegant ragwort, common ragwort, cross-leaved heath, pine bird's nest, brookweed.

16 Wild parsnip, meadowsweet, lesser skullcap, bristling bur-reed, white meadow saxifrage, rough chervil, shepherd's needle flowers. Goosegrass berries (called "sweethearts") are ripe and rosy. Five young spotted flycatchers hatched. Sycamore moth, coronet. The largest azure dragon-fly, with languid flight, abounds.

17 Flowers of arrow-head, spotted orchis, poppy, tormentil, chamomile, coltstail, goose grass. Young nightingales, and the old can only say "bit-bit" and "wheet torr." Ruby tiger moth, buff ermine, white ermine, water ermine.

18 Flowers of stonecrop, bladderwort, gipsywort, mountain thyme. Grey dagger moth. In Kent they still have a legend of a "Kine"—Gilbert White's "Cane"—which is a lesser weasel, like a large dormouse with bushy tail and the voice of a weasel.

19 Flowers of figwort, hemlock, lady's bedstraw, sun spurge. Clouded buff moth, fox moth, latticed heath, twin-spot carpet, green carpet, rivulet.

20 Flowers of bee orchis, birdsfoot-trefoil, burnet, heath bedstraw. High-brown fritillary butterflies appear.

21 Flowers of water plantain, flowering rush. Small black arches, short cloaked moth. Oats are tall and blue.

22 Voices heard at midnight—corncrake, sedge-warbler, cuckoo, nightjar. Tree-creeper's eggs. Nonsuch, wild carrot, upright hedge parsley, frog orchis, dogwood, elder, guelder rose, rough hawkbit, henbane flowers.

23 Silver-washed fritillary butterflies appear. Flowers of lesser spearwort, great spearwort, lucerne, sweet orchis, enchanter's nightshade, narrow-leaved hawkweed, long-rooted cat's ear, hairy hawkbit, goat's beard, deadly nightshade, germander speedwell.

24 Dark-bordered beauty moth, speckled yellow, barred red. Flowers of dogrose, autumn hawkbit, sow thistle. Field bindweed. woody nightshade, brooklime. Young partridges.

25 Leopard moth, common swift. Flowers of houseleek, lesser butterfly orchis. Sloes begin to be conspicuous. Young frogs abound in the wet evening.

26 Poplar kitten moth. Flowers of musk mallow, mountain everlasting, wood cudweed, fleabane, moneywort, wavy hair grass, downy oat grass, wild oat. Young nightingales fly.

27 Mother Shipton moth. Flowers of viper's bugloss, great bindweed.

28 Large heath butterflies appear. Poplar hornet, clearwing moth, currant moth, clouded border, lesser satin. Long-tailed titmice wandering with coal titmice. Flowers of hound's tongue, spiked star-of-Bethlehem, silver hair grass, quaking grass.

29 Eyed hawk, poplar hawk, privet hawk, engrailed, elephant hawk, moths. Missel-thrushes in small bands. Flowers of mignonette, dove's foot cranesbill, small-flowered cranesbill, hemlock storksbill, golden rod, foxglove, great water plantain, cock's foot grass.

30 Red-tipped clearwing moth, common vapourer, large emerald, willow beauty, grass wave, brown scallop, cinnabar. Ringed plover's eggs. Flowers of cow parsnip, hemp agrimony, smooth meadow grass.

JULY

DATE

1 Flowers of sneezewort, corn-cockle, corn chamomile, common chamomile, narrow-leaved water-parsnip. Whortleberries ripe. Lime-tree flowers. Dock seeds, blood red in the hay. Young starlings congregate. Nightjar's eggs. Cockchafers abound. Triangle moth, dew moth, rosy footman, four-dotted footman, orange footman, common footman, dingy footman, brimstone.

2 Magpies begin to range into those districts where they are never allowed to breed. Privet and blue-bottle flower. Muslin moth, cinnabar, scarlet tiger, grass emerald chevron, lesser yellow underwing.

3 Haymaking begins. Calamint, wild carrot, pimpernel, horehound, field madder, catmint, wood-vetch, angelica, yellow water-lily, candytuft flowers. Redpolls in flocks. Tiger moth, July thorn, small carpet, mullein wave, satin wave, smoky wave, blood vein, buff arches.

4 Cranberries ripe. Flowers of black mullein, cow-wheat, hemlock, ragwort, moneywort, common flax-seed, cathartic flax, shining cranesbill, sea-holly, procumbent marsh wort, fennel. Flowers and green berries of bittersweet. Brier hips red. Honeydew on the oaks. Small skipper butterfly appears.

5 Sparrows flocking in unmown fields. Pewits in flocks. Tufted vetch, large-flowered and common St. John's wort flowers. Silver "Y" moth. Marbled white butterfly.

6 Sheep's bit scabious, catmint, hemlock, fool's parsley flowers. Wood swift moth, lesser broad border, old lady.

7 Flowers of purple loosestrife, water hemlock, common rush, burnet saxifrage, teazle. Small heath butterflies appear.

8 Flowers of enchanter's nightshade, spurrey, common feverfew, frogbit, sweet gale, flowering rush. Dark green fritillary butterflies appear. Red underwing moth.

9 Flowers of golden-rod, branching willow-herb, common water-dropwort, river water-dropwort, field scabious, marsh cudweed, common hawkweed, shrubby hawkweed, ivy-leaved bellflower. Crayling butterflies appear. V-moth.

10 Flowers of black horehound, teasel, evening primrose, fool's parsley, wild angelica, parsnip, elecampane, Scotch thistle, centaury. Red admiral butterflies appear.

11 Canterbury bell, wild rose, agrimony, woundwort, yellow vetch, sow thistle, mullein, eyebright, wild thyme, bird's-foot trefoil, rest-harrow flowers. Brier hips large and reddening. Purple hair streak butterflies appear.

12 Hop bines overtop their poles. Flowers of meadowsweet, great knapweed, cornflower, succory, nipplewort, hawkweed picris, nettle-leaved bellflower, harebell, fine-leaved heath, sea lavender, great yellow loosestrife, field gentian. Last cry of the cuckoo. Young swallows and martins abound on the wing.

13 Field of peas picked. Flowers of water plantain, wild clover, wood sage, loosestrife, pennyroyal, water purslane, black nightshade, great mullein, ivy-leaved toadflax, water figwort, brown bent grass, crested dog's tail grass.

14 Willow herb flowers along with last year's seed-plumes. Flowers of yellow lady's bedstraw, knotted figwort, cornmint, greater skullcap, selfheal, greater butterfly orchis, bog asphodel, great reed mace, reed grass, common reed, hairy brown grass.

15 Young hedgehogs abroad. Flowers of wild morjoram, burdock, round-leaved sundew, wood small-reed grass.

16 Larks in small bands. Flowers of yellow vetchling, milk thistle, sawwort, marsh mint. Yellow-tailed moth, gipsy moth.

17 White hellebore, mugwort, devil's bit, recurved stonecrop, rose bay, great willow-herb, square-stalked willow-herb. Chalk-hill blue butterflies appear.

18 Hops flower. Flowers of lesser burdock, spear plume thistle, creeping plume thistle. Holly blue butterflies appear.

19 Young goldfinches wandering. Balsam flowers. Tortoiseshell butterflies appear.

20 Flowers of soapwort, wood strawberry, cudweed, least cudweed. White admiral butterflies appear.

21 Toadflax and succory flowers. Adonis blue butterflies over flowering mint.

22 Wood-white butterflies emerge. Flowers of horsemint.

23 Pale clouded-yellow butterflies appear. Herald moth, copper underwing.

24 Purple emperor butterflies appear.

25 Young swifts flying.

26 Hay harvest over. Flowers of wild clematis, corn-cockle, tamarisk. Birch catkins. Haws are red.

27 Rough hawkbit flowers.

28 Flowers of carline thistle.

29 Bordered beauty moth.

30 Flowers of autumn gentian, wood betony, sheep's sorrel.

31 Thistle-down lining the hollows of the woods.

AUGUST

DATE

1 Tortoiseshell butterflies come to the recurved stonecrop flowers. Mowing oats. Thatching the haystacks.

2 Flowers of gipsywort. New leaves on the oak.

3 Pea-field ploughed.

4 Flowers of small teazle, tansy, yellow iris.

5 Wormwood, narrow-leaved water-parsnip flowers. Many wheatears on the downs.

6 Reaping wheat. Flowers of corn parsley, ivy-leaved sowbread, forget-me-not.

7 Comma butterflies appear.

8 Large tortoiseshell butterflies appear. September thorn moth.

10 Ploughing fallow for autumn wheat. Pied wagtails wandering in flocks of twelve or so.

11 Young linnets in small flocks.

12 Marbled green moth, marbled beauty. Flowers of deadly nightshade, henbane. Marshes—meadow pipits in flocks; downs —wheatears in flocks.

13 Linnets at thistledown. Flowers of hairy mint, white horehound, Turk's cap lily.

14 Flowers and red and green berries of woody nightshade together; green berries and flowers of white bryony, too. Herb Robert and silverweed flowers.

15 Wall butterflies appear. Flowers of marsh-mallow, arrow-head reed.

16 Flowers of red campion, ragwort, hawkweeds, herb Robert, honeysuckle, buttercup, harebell, thyme, mouse-ear chickweed, meadowsweet, succory, marguerite, wild mint, agrimony, St. John's wort, convolvulus, yarrow, wood betony, figwort, scabiouses, gorse.

17 Hedge woundwort, willow-herb, balm and yellow horned poppy flowers. Speckled wood butterflies appear. Lychnis moth.

DATE

18 Young thrushes, missel-thrushes and robins singing. Butterflies on the chalk—peacock, painted lady, brimstone, grayling, chalkhill, Adonis and common blue, argus, fritillaries, small coppers, with burnet moths. Flowers of pennywort, marsh pennywort.

19 Clouded yellow butterflies appear. Yellowhammers in flocks. Flowers of marsh speedwell, broad-leaved helleborine, pyramidal orchis. Carting oats.

20 Pale oak eggar moth. Flowers of golden saxifrage, grass of Parnassus, lesser dodder, common speedwell, broom rape, vervain, mountain thyme, wild basil.

21 Swifts gone. Flowers of thyme-leaved speedwell, calamint.

23 Carting wheat. Second brood of swallows hatched.

24 Hazel-nuts ripe. Second brood of house-martins hatched. Creeping cinquefoil.

25 Flowers of tormentil, trailing tormentil, great burdock.

26 Mowing the aftermath. Flowers of agrimony, salad burnet, marsh ragwort.

27 Flowers of silverweed, field scorpion grass, viper's bugloss.

28 Flowers of creeping water scorpion grass, gromwell, dwarf red rattle.

29 Flowers of raspberry, bramble, avens, oxeye daisy, wild chamomile.

30 Threshing.

31 Linnets in small bands. Wheatears and wagtails resorting to the coast. Chiffchaff sings.

SEPTEMBER

DATE	
1	Hop-picking begins. A new grass-snake's slough.
2	Teal arrive.
3	Flowers of red bartsia, marsh red rattle, catmint.
4	Larks and pipits gathering on ploughlands. Fumitory flowers.
5	Flowers of ivy-leaved speedwell, common sorrel.
6	Flowers of yellow cow wheat, grey field speedwell.
7	Flowers of green field speedwell.
8	Black-bryony leaves become yellow and white and bronze.
9	Wood sorrel flowers.
10	Antler moth, flounced rustic, dark sword grass.
11	Wood-pigeons at their nests.
12	Wheat sowing.
13	Flowers of water figwort.
16	Sallow moth.
17	Flowers of purple loosestrife, great bindweed, autumn lady's tresses.
18	Flowers of field bindweed, mountain speedwell.
19	Flowers of smooth hawk's beard, foxglove, eyebright.
20	Flowers of fleabane, bur-marigold, stinking chamomile.
21	Flowers of ragged robin, wall hawkweed, common hawkweed, hairy hawkbit, rough hawkbit.
22	Cinquefoil flowers.
23	Flowers of spring water starwort, ivy-leaved bellflower.
24	Autumn-sown wheat sprouts. One chaffinch sings.
25	The first gossamer. Flowers of ivy-musk thistle, spear plume thistle, clustered bellflower.
26	Painted lady butterflies come to the blue Michaelmas daisies. Flowers of Canterbury bell, wild sage, buckwheat, curled dock. Hazel catkins noticeable.
27	Flowers of Scotch thistle, black knapweed, harebell, henbit nettle, great snapdragon, hedge-woundwort, marjoram, common hemp nettle, wood sage, red goosefoot, saltwort, common persicaria, broad-leaved dock.
28	Larks sing and roar. Chiff-chaffs and willow-wrens sing. Poppy, ragwort, white bed-straw and succory flowers.
29	Flowers of tansy, wild chamomile, mugwort, seaside plantain, white goosefoot, sea wormwood, mountain groundsel, brook-lime.
30	Flowers of field scabious, small scabious, hemp agrimony, golden rod, black bind-weed, great water dock.

INTRODUCTION

I saw sweet Poetry turn untroubled eyes
On shaggy Science nosing in the grass,
For by that way poor Poetry must pass
On her long pilgrimage to Paradise.
He snuffled, grunted, squealed ; perplexed by flies,
Parched, weatherworn, and near of sight, alas !
From peering close where very little was
In dens secluded from the open skies.
But Poetry in bravery went down,
And called his name, soft, clear, and fearlessly ;
Stooped low, and stroked his muzzle overgrown ;
Refreshed his drought with dew ; wiped pure and free
His eyes : and lo ! laughed loud for joy to see
In those grey deeps the azure of her own.

WALTER DE LA MARE.

The blue sky, the brown soil beneath, the grass, the trees, the animals, the wind, and rain, and sun, and stars are never strange to me ; for I am in and of and one with them ; and my flesh and the soil are one, and the heat in my blood and in the sunshine are one, and the winds and tempests and my passions are one. W. H. HUDSON.

MATTHEW ARNOLD was, I think, the first English critic to point out the importance of the interpretation of Nature in literature. "The grand power of poetry," he says, "is its interpretative power ; by which I mean, not a power of drawing out in black and white an explanation of the mystery of the universe, but the power of so dealing with things as to awaken in us a wonderfully full, new, and intimate sense of them, and of our relations with them." In the same essay, and in "Celtic Literature" and elsewhere, he quotes passages which show more or less precisely what he means by interpretation and especially by interpretation of Nature, and he coins the phrase "natural magic" for this element in literature at its highest power. But it is noticeable that he cannot illustrate his point from English prose, for it was not until some time after his essay was written that any men, except Shelley in "The Coliseum" and De Quincey and Coleridge in a few passages, had dealt

writer who helps us to see Nature clearly and at the same time to feel profoundly. Sir Thomas Browne sounded more stops than his predecessors, but not this one. Even Robert Burton's infinite variety includes nothing nearer to what we seek than passages like that beginning : " To take a boat in a pleasant evening, and with musick to row upon the waters." Izaak Walton was too blithe and untroubled to have discovered the sources of natural magic, though he has chance effects which are not unlike it. And though Arnold seems in one place inclined to give credit to Gilbert White for the power, I do not see that his view of Nature was far different from Sir Roger de Coverley's except in its curiosity.

In our own day Nature has been used by many of the best writers of fiction as a magical background. It is hardly necessary to mention names, but those of Messrs. Hardy, Meredith, Hudson, Cunninghame Graham and Conrad will at once suggest their diversity. And it is becoming every year more and more characteristic of our literature to study this background of " inanimate nature " and the animals for its own sake. Cowper's hare is interesting only because Cowper was fond of it and kind to it, Burns' mouse chiefly because it moved his passion ; but it would not be hard to point to passages in the work of living men where the animal emerges free from any human taint, grand, wild, with all its savage perfume about it, in the desert attitude, and with a spiritual quality not of the writer's but of its own. The typical modern writer does actually suggest in written words that violent shock of the beautiful but inhuman which we have when suddenly the tall hare leaps across our path, or the dog fox's bark on the Downs makes twenty centuries of civilization nothing.

This interpretative literature has an immense field before it. There is no fact in Nature which some day it will not evoke into shining, melodious perfumed, tangible life. It is trying hard to do so ; perhaps it is a little troubled by the size of the field. It denies no fact, just as it rejects no intuition. The best of its exponents have a sound knowledge of the facts of Nature and an inexorable curiosity, coupled, as they have hardly been before, with a deep and sometimes passionate and mournful love of all that takes place in the open air and in the human mind under its influence. They have, too, a curious interest in character—the character of birds, for example, of snakes, of places. Their writing adds considerably to pure knowledge, and, by their sense of the poetry in life, appeals to every one with an intellectual and spiritual life, whether naturalist or not ; and it gives an interesting view of the

mind of our age and continues the revelation which Jefferies began in "The Story of My Heart."

It is with the hope of making clear the riches of the English country and, no less, of the men who are writing about it, that I have arranged these chapters of THE BOOK OF THE OPEN AIR. The names of Messrs. W. H. Hudson, W. Warde Fowler, G. A. B. Dewar, "Scolopax," Alfred W. Rees, J. C. Tregarthen, Edward Clodd, A. H. Patterson—to mention but a few—standing as they do for truth and energy in a variety of forms, will make it evident that I have not passed over many of the best men, and I hope that the absence of other respectable names is not due to any fault of mine. It is not a text book; it is not in any way exhaustive; but it does aim at giving a vivid and precise impression of wild life in England, and thereby if possible creating a fresh impulse towards the affectionate and careful observation of which it is one monument.

EDWARD THOMAS.

BOOK I

SPRING

I

IN PRAISE OF RAIN

"A land of hills and valleys, drinking water of the rain of heaven."—*Deut.* xi. 11.

IT is the privilege of the educated Englishman, unless he be a farmer or a market gardener, to think of rain as a nuisance. He does not understand his debt to it; he hardly knows what it is to long for it. It interferes with the out-of-door games that he loves, and it spoils his cycling or his motoring. But the fact is that the peculiar beauty of his country is more the result of rain than any other cause. It is rain, the gentle constant rain of the ocean, that has moulded his country into hill and dale, and made his roads twist and turn, mount and descend, ever giving him fresh scenes as he moves along them. It is this gentle rain, not coming in seasonal deluge, but spreading itself in fair proportion over the whole year, that has given such constant variety to his landscape, and has given himself the unconscious eye of an artist in contemplating it, and in suiting to it the works of his hands. The approach of rain, the passing of rain, the rain over and gone—all these phases of his enemy's being have an educating power on his eye and mind, though he be unconscious of it. They are beautiful in themselves, and the changes they work in the atmosphere and on the earth keep his outdoor mind alive and stirring. They accustom his eye to see his landscape through a glorifying medium; they have given his painters a sense of atmospheric effects which perhaps belongs to no other nation, for in this moist land of ours the atmosphere is almost always visible between us and the object we look at in the distance.

And it is rain, spreading itself thus so constantly and so quietly over the moderate elevations of our land, that has made water an almost invariable accompaniment of our wayside scenes; our roads and lanes and footpaths are for ever crossing it, and bridges great and small are tempting the artist to set up his easel, or the wayfarer to lean on them and refresh his eyes with running water and its plants and animals.

The motorist and cyclist shoot past these pleasant spots, but for the walker there is nothing more delightful than to look leisurely over a bridge. These streams never wholly dry up, like the torrents of Greece and the East ; and in summer the wealth of their vegetation—a wealth that often almost hides them from view—is beyond my power to describe. Loosestrife, forget-me-nots, willow-herb, water-lilies, yellowflags, flowering rushes, are the embroidery that the kindly rain sets upon her daughters the streams.

We hardly know in this country what a drought is. The last I can remember was in 1893, lasting from the middle of March to the middle of May ; I can well remember the intense relief when the moisture came at last. As a rule we have to learn the true value of rain from the Hebrew poetry, the only Eastern literature we read. The psalms are full of this lesson for a Western ; and in the last poem written by the poet-king (2 Sam. xxiii. 5) it is expressed in a simile of exquisite beauty: the just king is "as the tender grass springing out of the earth by clear shining after rain."

There are of course different kinds of rain, of different degrees of pleasantness. There is the heavy downpour, sustained and perhaps depressing, in which it is not enjoyable to be out ; yet this does excellent work in washing as well as in stimulating growth. After a spell of dry weather everything needs to be cleansed ; and this rain carries away from the surface of the earth and the roads all that ought not to linger there, fills the streams and washes their beds and banks. Even if they flood there is seldom much harm done, and the refuse that is spread over the meadows when the flood retires sinks into the ground and helps to enrich it. Then there is the soft warm rain that makes all nature rejoice, plants and animals alike—*neish* rain, as we call it, or used to call it, in the west ; even man can be out and enjoy himself in this rain, for it makes all other things happy and fragrant, and can do himself no harm. But the most beautiful of all rain is that which comes in showers—showers of which nature drinks quietly and earnestly for a while, and then seems to lift a smiling face in grateful content as the sun comes out on her. In the spring of 1906 we had but few of those exquisite days of warm sun and soft shower from the west, which are so peculiarly English that to be without them in April and May is like being deprived of our birthright. And lastly, in contrast with these delicious showers

RAIN.

From a photograph by
Rev. F. C. Lambert, M.A.

there is yet another rain, distilling itself from cloud and mist on our western hills for many days together, hindering rather than helping the works of man, if not of other living things, and reminding us that neither rain without sun nor sun without rain can do for us and nature exactly what we wish. In a Cumberland dale I have seen the whole population making hay, while the sun was shining on a Sunday morning, with the full sanction of their good parson, who postponed his service for their benefit, and finally preached a sermon of extraordinary eloquence and power to a congregation of two strangers and his sexton. Those strangers soon found that they must accept the drizzle and make the best of it, and that all attempts to counteract it by umbrellas and mackintoshes are vain and even harmful—for they do but keep reminding you that it is raining.

It is true then that the sweet and even distribution of rain over the greater part of this island has its exceptions ; there is no part of England that has as a rule too little rain, but there are districts which get too much, and where man loses the constant sense of wholesome change, and the frequent cheering influence of the sun.

But let us return to the lower lands, where rain rarely continues for many days together, and watch the subtle influence it has on the life of plants and animals. All plants, as we all know, must have water, and many of them will droop after a day or two of dry heat ; then, when the rain comes, it is almost possible to see the grass growing. The processes that go on at the roots and in the stems and leaves are hidden from us ; but it is interesting to note the different ways in which different kinds of plants deal with the rain as it falls on their leaves. Some adorn themselves with it, retaining it in the form of gems sparkling in the sunshine, and thus make themselves more beautiful than ever to the human eye ; others distribute it over their leaves as moisture hardly discernible unless we look at them closely ; and some few seem almost to reject it. As you walk along a road during or just after a shower, looking into the hedgerows (always a most soothing occupation for eye and mind), and chance to be thinking of this treatment of rain by the plants, you can hardly fail to be struck by the surly and inhospitable conduct of the whole nettle tribe—a tribe that flourishes in dry places, and seems to be none the worse for dust and drought. The

nettle leaves seem really to reject the rain; you may look in vain for a leaf which clearly shows the moisture upon it, and if you closely watch the drops falling, they seem to vanish and come to nothing as they reach these dark forbidding structures. Yet underneath them the long swordgrass is sparkling with a thousand diamonds; so is the clover, and the beautiful silverleaf (*Potentilla anserina*), and above them the wild rose and the honeysuckle both keep these brilliant gems for a short while. It might almost seem as if the plants that we love best have this way of decking themselves out, while those that we value least have never acquired it; for I notice that neither the docks nor the tall acrid buttercup can use the rain to please the human eye. But this is fancy, and for the real facts and the reasons for them, which are doubtless to be found in the varying structure of the leaves and the nature of their surfaces, we must go to the professed botanist. I have lately noticed that of all the plants in my garden the lupins, even with their small pointed leaves, which look as though they never could retain a drop, had decorated themselves more beautifully than all their neighbours. I put a lupin leaf under a strong magnifying glass, and found the surface softly hairy; but this does not carry me very far. Experiments with a watering-pot as well as the magnifying glass might tell us something more.

No one needs to be told how wholesome for the life of birds is a shower of rain; they let us know it themselves by breaking out into song the moment the rain has passed. I seem to notice that this is more particularly the case with our resident species, less so perhaps with those that have come from hot climates to bring up their young in cooler regions. Or at least I shall not be wrong in saying that few of these summer migrants will sing actually during the rain, while the blackbird, song-thrush, missel-thrush, robin, may always be heard if the rain is not too hard and cold. Yesterday (May 16) we had the first soft rain—fragrant rain, as I like to call it—that we have enjoyed for weeks, and while it was falling the blackbirds were wonderfully voiceful, and, as I fancied, unusually mellow. The sweet monotonous song of the missel-thrush is often to be heard while a wet gale is blowing; but the whitethroats and whinchats and blackcaps, which have only lately joined us, seem to like to wait till the rain is over. I am not

so often out in rain for long together that I can speak with entire confidence on this point; but if it be so, the reason probably is that the insect-eaters like the sun best, the grub-eaters the rain.

But it is not only the song and the food of our native birds that is affected by the rain supply; some of them need it for their masonry as well. In a very dry spring neither thrush nor blackbird can line his nest with mud, and I have heard of cases in which they had for once in a way to do without it. Swallows too, and housemartins, must have mud for the structure of their nests, and their nesting operations may be delayed for weeks by dry east wind and hot sun; in such a year we may look out for young martins still in the nests well into October. If the spell of drought is broken by a thunder shower, it is pleasant to see the swallow tribe instantly busy on the roads or by the pond side—but a single shower too often only raises false hopes of progress.

In the rain of yesterday the grass in the hedgerows was adorned not only by the watery gems, but also by the many varieties of the common little snail which we all know so well (*Helix nemoralis*) on the downs, and in all short sweet pastures they were climbing up all long stalks even to the very top, as if from a desire to get right into the full favour of the rain. Indeed all creeping things, except perhaps the viper, enjoy the moisture, which rids them of dust and all the grittiness that comes of drought. Lately in period of east winds and frost it was pitiable to see worms covered with grit and gravel wriggling on the path, plagued no doubt with parasites, loathsome even to the birds, which never seem to touch them in this state; now if I see a worm on the road,—and after rain they are out all night on the roads, and even longer—they are clean and wholesome, without a particle of gravel sticking to them. In the garden the frogs and toads, as well as snails, come out and revel in the dampness, and the tortoise, if you have one, knows that he will find his food succulent. The most wonderful exhibition of reptile life that I have ever seen was not in England, but on a Swiss Alp, which became alive after rain with fat, jolly little salamanders, all crowding and tumbling upon each other, and with their jet-black skins shining with moisture.

One kind of living creature does not relish rain—I mean the fully

developed insects. But in the early stages of their career they have owed so much to rain and moisture, that in later life they have to take things as they come. The larvae of all insects are themselves moist, and need moisture to give them bodily comfort and the vegetable matter on which they feed. Caterpillars must have their food-plant, which cannot grow without moisture; so that when we see the Mayflies crushed by a thunder shower, or miss the butterflies on a wet day, we have to reflect that they would be neither Mayflies nor butterflies if it had not been for the kindly rain. As to spiders, I am half inclined to guess that they are abnormal and dislike rain from infancy upwards; but this I must leave to the specialist.

So it would seem that man, and almost all if not quite all the creatures that live around him, are the better for rain and ought to enjoy it. Long ago we used to be afraid of it, and even for an ordinary walk young ladies used to take some time to "get ready." The little heroine of that delightful novel *Northanger Abbey*, could not walk by the Avon at Bath with Henry Tilney and his sister because it came on to rain; and it is pathetic to contemplate her grief as she watched the first drops on the window panes. "Oh dear, I do believe it will be wet," broke from her in a most despairing tone. In these days healthy English men, women, boys and girls, do not mind rain. Last spring, landing on the coast of Asia Minor, a hundred and fifty of us, old and young, were wetted through by a thunderstorm in ten minutes; we pushed on, and no one seemed to mind. Here, in the sweet gentle rain of the Atlantic, we ought to be quite content. And we need be in no hurry to get home quickly, if we would see the earth and all its creatures rejoicing under the genial influence of the moisture.

II

THE OTTER'S HOLT

> "To climb the trackless mountains all unseen . . .
> This is not solitude; 'tis but to hold
> Converse with Nature's charms, and view her charms unrolled."
>
> —BYRON.

"'TISN'T a fox as lives in the White Stones, sir," said my visitor, "so you were wrong in your guess when you sent me to watch there yesterday. As far as I can make out, the 'run' leading down from the carn to the pond where old Aben washes his sheep is 'travelled' by a different sort of animal. Nobody but ourselves need know that, whatever. A sheep-dog might turn clap-cat, but then, Aben's shepherd don't go up so high on the moor, for he can see what's nigh the carn from the foot of the hill, without climbing among the rocks. As for old Aben hisself, his breath's a bit too short for clambering about the White Stones. Nigh every week, for years, on market day in the village, Anne Marged Jones at the shop's been giving 'n a packet of peppermint drops, extra-strong, to lengthen his breath, but they don't work, and I s'pose hill-climbing 'll never be much to his mind the more.

"It would be better for Aben to come down from the farm, and hang up his hat on the nail behind Anne Marged's passage door and have done with ploughing and shearing; he'd be welcome. There's a lovely life he'd be having with Anne Marged! She'd be fussing over 'n like a hen with one chick; for, as you're knowing, sir, she's an old maid, and for all that she's a good-tempered body. And once an old maid gets the fellow she's dulling on, she's like a mother and a missus and a lass all in one to 'n. She don't take count of things like shortness o' breath, not she! 'cept to mix bottles and bottles of camphor oil to rub on his chest; and why! all 'twixt her and him's like a second spring, as comes in the fall of the year."

My companion was an interesting gossip, and I let him ramble on with his story of Aben's infirmities, his camphor oil and herb tea, and how by smoking the sun-dried leaves of colts-foot the sufferer had sometimes found relief when Anne Marged's peppermint drops were ineffectual. Presently the tale was again of wild life on the moor.

"'Twas just about sundown when I got to the carn, sir. You'd told me not to let anybody see me once

I'd passed Mountain Gate, so I went along the rough path by the bog, where the furze was tall, and up the bed of the stream in the dingle to the foot of the carn. Half-way from the furze I came across a sure fox-sign, as I thought—half-a-dozen white feathers from the breast of a duckling. 'Aben's ducks don't come so far up the dingle of their own accord,' says I to myself; 'it seems to me a vixen's busy with a family in the carn.'

"Well, I climbed the White Stones near to the top, and settled down comfortable in the fern, so's I could view a likely opening or two below me. By-and-by, old Aben passed up the opposite hill, holding his sides, and coughing now and then, on his way for his drop of beer in the *Farmer's Arms* at the cross-roads. 'Twas wonderful how well I could hear 'n—the air was so still. When he was far on the edge of the moor, up jumped a covey of grouse, not two hundred yards from the Stones, and came flying straight to the place where I was hiding, two old birds and a lot of little poults as seemed proud they could fly. They lit on the ground about twenty or thirty yards from the Stones, in a big clump of heather and fern. I kept my eye on the spot, and soon the cock grouse walked down the dry bed of the stream, with his family in the rear. He crooded (crouched) down close by a small heather bush. I couldn't see what was happening to his mate and the poults, but I judged they were putting up for the night close by. Thinks I, 'One or two of that family 'll be missing afore dawn; if there's a vixen with cubs hereabouts she's certain to use the path down to the brook, and she'll come plump on 'em in their sleep.'

"I watched and watched, but nothing like a fox came out of the carn, though about midnight I heard a pebble rolling down to the edge of the little stream—the water's only a trickle now, the weather's been so dry—and I fancied, a minute after, that a fern moved, as if some animal brushed under it. But I couldn't well see the ground between this spot and the lowest of the big stones in the carn, so I crawled to the other side, and lay where I could get a better view. I tried my best to keep awake, but the mountain air was too strong for me, and made me go to sleep. I woke just afore dawning, after a couple of hours rest, and felt as fresh as a lark. I thought I'd surely see the vixen afore long, or not at all, so I settled to watch once more. The sky grew brighter and brighter above

the furthest hills, and though the hills looked black against the sky, there was a cold, white light about the carn.

"Sudden-like, I heard a stone falling again by the stream, and made out some grey animal climbing through the shadows into the light. Then I saw, as it came nearer, 'twas a full-sized otter carrying something in her mouth. She came to a sort of gallery between the rock I was lying on and the next, so close that by leaning over I could have touched her with my beating-pole. She must have smelt me, I fancy, for she disappeared, with a gallop like a weasel's, under a block of stone at the end of the gallery. I found the opening later on in the morning, and, what's more, I learnt, by some feathers lying about, that 'twas a grouse-poult she'd carried in her mouth.

"I stayed on the rock, and finished the bread and cheese I'd brought in my pocket. Nothing was stirring on the moor. The morning drew nigh to sunrise when the ferns and heather moved again by the stream, and out walked the old cock grouse into the open. He trimmed his feathers, stretched his wings, scratched his neck with his claws, and then, standing high on his legs, he tried to crow. But somehow he'd forgotten the trick; the sound wouldn't come right; perhaps he'd been short of practice since his courting days; anyrate, a minute after he seemed quite frightened by the noise he'd made, and ran as fast as he could in and out of the heather bushes to a mound where some sheep had scratched a shelter from the wind. Once there, he felt safe, and, drooping his wings, he strutted about as if the whole moor belonged to 'n. One little poult, then another, and another, till I counted ten of 'em, came from the place where they'd been hiding for the night; and, last of all, the hen showed herself. The little 'uns ran here and there, pecking and squabbling, but never far from their mother; and she walked, stately-like, and taking plenty of time, to where her mate was playing pranks on the 'tump.' By the mound was an open place, with a fringe of heather hardly a foot high, and, behind this, furze and fern and heather standing tall. The old birds looked quite content, and like to stay there for hours, till the sun got strong.

"I'll never see a prettier picture than that family of feeding grouse at home on the moor. Nature's kind to wild creatures, sir; a lot kinder than to me and you. We've got the power to think, and think, to be

sorry for what we've done, and to hope that such-and-such a thing won't happen to us; and we've got to pay dear for it. When I'm lying abed o' nights, sometimes I'm fancying what 'll happen to me when I'm sick, an' haven't got a penny in my pocket; and the sweat pours down my for'head with the very thoughts of it. English people, they say, don't understand us in the West, 'cause after a funeral we're as like as not to get drunk at the inn. 'Tis the black misery and doubt and lonesomeness of death that we're fearing. We can see just what's going to be with us some day. It's awful; and to shut it out we grab at the jug of beer or the whisky bottle, so's we might forget we're certain to follow the poor thing we lowered into the earth.

"But wild creatures be different—they don't rack their brains about what's happened or likely to happen. They just take life as it comes; one bad sickness or one accident, then it's over. And I'm often wishing to be like 'em. The grouse on the mountain didn't worry about the little poult carried by the otter to the carn—they'd no power to do it. Perhaps they didn't even know the otter 'd been that way. You see, sir, grouse-poults when they grow too big to shelter under the hen don't 'jug' in a ring at night, like partridges; they sit here and there, or in twos and threes, it may be, though never far from the old birds. The poult the otter caught was a bit too independent and slept further than he ought to've done from the rest of the brood—that was easy to believe from the marks on the ground—and so, I should say, the old birds hadn't been frightened. Even if they had been, they'd recovered by the time I saw 'em.

"In the open by the mound the old birds were browsing on the tender heather-shoots, pecking at 'em and nipping 'em off dainty-like, for all the world like poultry catching flies on the tops of the long grass in a meadow. But the poults amused me most. They'd run from side to side, over the mound, or out into the narrow path leading to the stream, as restless as bees. One would take a fancy for a sprig of heather the hen was pulling at, and would reach up on tip-toe and nip it off right beneath the old bird's beak. Another, by mistake, would break a spray that was too big to be swallowed whole, and there'd be a race and a tug-o'-war. Whenever the cock found something extra good, he'd cluck softly and call the youngsters, and they'd gather

THE OTTER.

From a Photograph by
Charles Reid, Wishaw.

round him, all eager and inquisitive, and ready to squabble the minute he showed 'em what he had.

"He was keen on teaching 'em to scratch at the soil where the sheep had been lying on the shady side of the 'tump'; I think he was searching for seeds and beetles, or perhaps for the ticks that the sheep had left behind. After all the birds had fed they squatted by the mound—they'd no need to go to drink, for the dew had been so thick on the heather that I saw it fly off in a tiny cloud when the old birds plucked the shoots. There the grouse sat in the sun, and presently all but two were dozing. The two that kept awake were the hen and a poult sitting close together. The little 'n would stroke the old 'n's breast, running his beak up through the feathers in a gentle coaxing sort of way. In her turn, the hen would lower her head and pet him, as if she was fonder of him than of any of the others. Then these two moved, lay down in the loose earth close under the 'tump,' and wallowed and pecked, and kicked up the soil over their wings and back, till at last, when they'd dusted every feather, they stood up, shook themselves, and found it was time for the morning's forty winks.

"I thought I'd seen enough, so I climbed quietly down the far side of the rock, and crawled round to look for the otter's 'holt.' 'Twas a pity I hadn't waited. I peeped from the stones, and there, on the pebbles by the watercourse, was the otter, running fast down the path in the direction of the sheep-pond, while the covey of grouse was on the wing, and just turning round the hill on their way to the bog. The otter must have come out and disturbed the birds when I was climbing down the carn.

"I thought the best thing left for me was to find out the entrance to the 'holt,' and learn all I could as to how and where the otter 'd caught the poult. Her 'spur' was on a soft patch of gravel at a bend of the little brook, and I should say she'd taken a short cut from that place to the carn when she happened on the grouse. Unless I'd seen her, I'd never have believed she'd live so far from good fishing and so high up on a moor. And why did she leave her 'holt' in broad daylight, 'cept because she had cubs, and was ravenous for food to help her in her mothering?"

III

THE FLOWERS OF EARLY SPRING

"Once more the Heavenly Power
Makes all things new."

VERY early in the year "the wandering herbalist" meets with "sweet omens of approaching spring." The "harmless" but happy man, as he passes down the sheltered lane or through the leafless wood, will notice here and there, if the snow be not too thick upon the ground, evidences of returning life and beauty. The sap at any rate is stirring in the forest trees; the catkins on the hazel are beginning to show themselves; the glossy leaves of the arum are shooting up from among the withered leaves, and it may be a few flowers of the common groundsel or the humble chickweed are opening their petals to the winter's sun.

In the gardens, even in January, the Christmas rose is in full flower, and in some warm sheltered places the sweet-scented coltsfoot (*Petasites fragrans*) may be found. This plant, sometimes called from its delicate fragrance the winter heliotrope, has become naturalized in many localities in the south of England. It is abundant in certain spots of the Undercliff in the Isle of Wight, and in the grounds of Swainston, not far from Farringford, where Tennyson wrote the touching lines in memory of "The Prince of Courtesy"—

Nightingales warbled without,
Within was weeping for thee.

It also grows at Portchester, beneath the shadow of the Norman keep, and in most seasons is in full blossom by the third week of January. The winter aconite (*Eranthis hyemalis*), as its name indicates, is another early flower, and is frequently in bloom before the first month of the year has run its course. As a garden plant this species with its solitary pale yellow flowers is well known, but it is sometimes to be seen in a semi-wild state. There is a large patch of it beside a lane in the parish of Farringdon, where, it will be remembered, Gilbert White was curate for twenty-five years. He must often have passed the spot, which is not far from the ancient church in which he officiated,

but he does not allude to it in his famous book. It is, however, interesting to notice that he mentions the plant in a passage which is not inappropriate to the subject of these papers. "Of all the propensities of plants," he writes, "none seems more strange than their different periods of blossoming. Some produce their flowers in the winter or very first dawnings of spring; many when the spring is established; some at midsummer; and some not till autumn. When we see the *Helleborus foetidus* blowing at Christmas, the *Eranthis hyemalis* in January, and the *Helleborus viridis* as soon as ever it emerges out of the ground, we do not wonder because they are kindred plants that we expect should keep pace the one with the other. But other congenerous plants differ so widely in their time of flowering that we cannot but admire." Of these he instances the crocus, of which the vernal species expands its flowers, as in the meadows near Nottingham, by the beginning of March, while the autumnal "defies the influence of spring and summer, and will not blow till most plants begin to fade and run to seed. This circumstance," he adds, "is one of the wonders of creation."

Of the early-flowering plants mentioned in this passage, both the hellebores are still to be found at Selborne. White speaks of the *Helleborus foetidus* as growing "all over the High Wood and Coney Croft Hanger," and adds, "the good women give the leaves powdered to sick children; but it is a violent remedy, and ought to be administered with caution." This handsome evergreen plant, allied to the Christmas roses of cultivation, and in the olden times intimately associated with the practice of herbalism, is one of the most interesting in our native flora. Old Gerarde, as we should expect, has much to say with regard to its virtues. He calls it the "Ox-heele or Setter-wort, which names," he adds, "are taken from his vertues in curing oxen and such like cattell." He then goes on to explain the method by which "the old Farriers or horse-leeches" were wont to work: "They cut a slit or hole in the dewlap, as they terme it (which is an emptie skinne under the throat of the beast) wherein they put a piece of the root of Setter-wort, suffering it there to remaine for certaine daies together: which manner of curing they do call Settering of their cattell." The plant, from White's entry, was clearly abundant at Selborne in his day; and as

late as the middle of the last century it occurred in "considerable plenty" in the rough stony ground about St. Lawrence in the Isle of Wight. In both localities the plant has now become exceedingly scarce, but in the spring of 1888 some six or seven plants were in flower on Selborne Hill.

As early as the month of January, unless the season be exceptionally severe, the spurge laurel (*Daphne laureola*) will be flowering in many of our woods. This handsome evergreen shrub, at first sight not unlike a rhododendron, but with inconspicuous yellow-green flowers, is highly poisonous, and like the hellebore was formerly employed as a horse medicine. For this purpose it used to be gathered in the Sussex woods, and taken to the Chichester and Portsmouth markets for sale. A near relative of the spurge or wood-laurel, but far rarer, is the beautiful *Daphne mezereum*, whose fragrant pink flowers appear before the leaves early in March, and are followed by bright scarlet berries. This most attractive shrub, though not uncommon in cottage gardens, is now scarce in a wild state, and is very seldom met with. It is curious that the older botanists are silent as to the occurrence of this plant in Britain. Gerarde, who includes it in his Herbal under the name of "Germane olive spurge" or "dwarfe Bay tree, called of Dutchmen Mezereon," says that it "growes naturally in moist and shadow woods of most of the East countries, especially about Nelvin in Poland, from whence," he adds, "I have had great plenty for my garden, where they flower in the first of the spring, and ripen their fruit in August." Ray, again, does not include it in his Synopsis of British plants. Still it is considered by Babbington and other distinguished authorities to be a native plant; and it certainly appears to be indigenous in the counties of Sussex and Hants. In his *Gardeners' Dictionary*, published in 1752, Miller says, "There have been many of these plants taken out of some woods near Andover in Hampshire." In 1778 Gilbert White records it as growing on "Selborne Hanger among the shrubs at the south-east end above the cottages." In the middle of the last century it is reported as occurring in the woods about Bishop's Sutton, West Meon, and other places in Hampshire. Since then the records of its existence have been few and doubtful, and repeated search has failed to find it on Selborne Hill. It was feared that the plant had become extinct, owing, at any rate in part, to the

practice of transplanting it into cottage gardens. For many years I searched its ancient haunts in vain. In spite of the friendly co-operation of gamekeepers and woodmen in different parts of the county, not a shrub could be discovered. At last we were successful. A woodman wrote to say he had found the "mezell." I at once started for the wood, some ten or twelve miles distant, and there to my delight I counted no less than twenty-two plants, many of them in flower. The bright pink blossoms looked most attractive, while their fragrance was delicious. The woodman knew of other plants, he said, elsewhere, but except in flower they were "wonderful difficult" to find; still when the red berries were ripe it was possible to distinguish them again. The rabbits, he said, were the worst enemies of the "mezell"; if it weren't for the rabbits the plant would be common enough. A few years later, in answer to an inquiry, he wrote that the plant had become very scarce, he could "only find one tree but what have been bit off by the rabbits." In my last parish, near Petersfield, the mezereon was to be found in two woods. The old sexton, who had done much copsing in his younger days, assured me that in William's Wood, when cutting the undergrowth, he had seen as many as a score of plants together. They were mostly, he said, in the corner of the copse near the great fir trees. Another old woodman, nearly ninety years of age, confirmed the statement. They were common, he said, when he was a boy; he had often rooted 'em up to put in his garden; but he "hadn't seen n'ere a one for many years." An old lady who had done field work all her days, told much the same story; but they still grew, she asserted, in William's Wood: the plant in her garden came from there some fifteen years ago; she "know'd where to find the mezell." I promised her five shillings if she would find a plant and take me to see it. She went several times to the wood, which was close to her cottage, but not a plant could she find. The rabbits had destroyed 'em, she said. It was clear, however, that the mezereon used to grow in William's Wood, and as recently as twelve or fifteen years ago, and it was doubtless there still if only one could chance to light upon it. At length, after many fruitless searches, diligence was rewarded, and on March 13, 1900, on a steep slope of the wood close to an ancient yew tree, I came across a fine bush, of several years' growth, covered

with its sweet scented blossoms. In the following spring I found a second plant "near the great fir trees," and another in a wood hard by where the wild snowdrop grows. So the *Daphne mezereum* may still be reckoned among our indigenous wild flowers of early spring—at any rate in the county of Hants.

By the time the pink flowers of the mezereon have faded and the berries have begun to swell, nature has assumed a more springlike aspect. Along the hedgerows the lesser celandine (*Ranunculus ficaria*) so dear to the poet Wordsworth, stars with its golden flowers the mossy banks. In damp spots the charming little moschatel may perchance be found; while violets, both the sweet scented and the dog violet, are everywhere. The delicate vernal whitlow-grass (*Erophila vulgaris, DC.*) will be noticed on many an old wall, and on the railway embankment the bright yellow coltsfoot is making a brave show. Out in the woods many species are now in flower. In places the dog's mercury (*Mercurialis perennis*) completely covers the ground with its dark green foliage. The wood-spurge (*Euphorbia amygdaloides*) is very conspicuous with its leathery leaves touched with purple and its pale yellowish-green flowers. The anemones and primroses are in all their glory, and never are the woods so enchanting as when they are in flower. In some localities the common daffodil (*Narcissus pseudo-narcissus*) or Lent lily as it is sometimes called, is also to be found; and there are few more beautiful sights on a sunny day in early spring than "a host of golden daffodils fluttering and dancing in the breeze." Of Wordsworth's daffodils his sister wrote, "They grew among the mossy stones; . . . some rested their heads on these stones as on a pillow, the rest tossed and reeled and danced, and seemed as if they verily laughed with the wind they looked so gay and glancing." No wonder that this lovely flower

> That comes before the swallow dares and takes
> The winds of March with beauty.

has been dear to the poets. Herrick's exquisite lines are well-known. "Narcissus," sings Shelley,

> the fairest among them all,
> Who gaze on their eyes in the stream's recess
> Till they die of their own dear loveliness.

"A thing of beauty," cries Keats, "is a joy for ever. . . .

> and such are daffodils,
> With the green world they live in."

WILD HYACINTHS.

From a photograph by
Charles Reid, Wishaw.

IV

SOME ENGLISH BUTTERFLIES

"Unpiloted in the sun . . .
With idle effort plundering one by one
The nectaries of deepest-throated blooms."
—ROBERT BRIDGES.

MOTHS and butterflies alike are embraced in one great order of insects, and the scientific distinction between them is often uncertain and obscure. But the butterflies have, above all, a delight of pure and ardent living in the sunshine which is the real distinction of their race, though the needs of science may have enforced recourse to an exacter standard of discrimination based upon the form and fashion of their feeler-tips. There are a few moths, it is true, which love the sunshine better than the night; but no single butterfly has willing traffic with the hours of darkness, unless, exceptionally and rarely, for some syrup-loving and bibulous Red Admiral, which may be found still clinging drowsily in its cups to a rotting pear or plum in the warm September garden, under the canopy of a moonless sky. Even more than the beauty of their colouring, which is by no means always greater than that of the moths, or than the absence from among their number of that dim and multitudinous fringe of mote-like life which confuses the moth-world with the shadow of specific infinity, it is this brilliant vitality, this natural citizenship of the sun, which marks out butterflies among insects with a supreme attraction and charm.

When the first day comes in March when the air is quick with awakening life, and the earth drinks deep of new, hot, golden splendour from a sun now high in heaven, the seal is set on returning spring by the great yellow wings of the Brimstone butterfly, purposefully beating down the rides and lanes like a visible concentration of the light. With him, or even before him, in the illusory brightness of some halcyon winter noon, there appear three or four other species of a different family, of which the characteristic predominant colour is deep and brilliant red. The commonest of these early spring butterflies are the Small Tortoiseshell, the Peacock with his rich eye-pattern, and the Brimstones, male and female, in their brilliant yellow and delicate primrose-green. Scarcer but still regular pioneers of spring are the Large Tortoiseshell, which has a tawnier dash

in its red, and the strangely-fretted Comma, with its outline like a jagged shell. These, with three or four others seen more rarely, make up the large and brilliant vanguard of the returning butterfly year; and yet none of this band are true children of the reviving spring, but all are age-worn survivors of last September's sun, which, by a special dispensation of Nature, have slept out the winter's dark and cold. If they are closely scanned, basking on the warm gravel walk as is the habit of the red "Vanessae," the eye will mark at once how sadly they are scarred and worn with accident and age. The strong, compact wings of the Brimstones seem usually in better case, but even the Brimstones appear tarnished and faded under the first suns of spring. The battered brightness of these hibernating butterflies in the new spring sunshine is in striking harmony with the withered and sluggish torpor which the earth still shows under the first full flood of revivifying light. The earth, too, is defaced and sore with winter, cumbered with bleached and matted herbage where the new shoots are only now swiftly springing, and bared to the brilliant sun with still arid and frost-scarred clods. Such days have all the poignancy of a siege relieved; and the touch of pathos in this contrast is nowhere expressed more fully than when a torn red Tortoiseshell butterfly, that winter has scarcely spared, alights in the new March sunshine on a golden, fresh-blown dandelion flower, brilliant in every petal with the tender luxuriance of spring.

Spring waxes and deepens, the young leaves spread and glisten where all was bare, and presently there comes the day when the first new butterflies of the year wing their way abroad in the morning sunshine, with an unstained freshness of life and colour as beautiful as the larch's misty green, or the song of the chaffinches in the limes. The day of last year's veterans is done, as soon as their eggs have been laid on the young nettle or buckthorn shoots, to bring forth in due time, through threefold mutations of development, the full brood of late summer and early autumn. In harmony with the whole tone of the spring, the colours of the April butterflies are as delicate and fresh as those of the Vanessae and the Brimstones are deep and full. The Common White of the cabbage-gardens has a cool purity of colour, as it flutters down a moist upspringing hedge-bank of blue speedwells and starry stitchwort, which we forget to

notice when high summer has multiplied its numbers. Much more beautiful still is the Orange-tip of the May lanes and meadows, dusted and chequered with gold and green on its under surface, and with half the white fore-wings of the male dipped in a brilliant orange-red. It lives out its life during the flower-time of the white cow-parsley, mimicking this blossom, which it loves to haunt, by the fretted whiteness of its wings; and its pure tints brightly flushed with mounting summer seem the very incarnation, in light winged form, of the essential spirit of May. Another of the first spring butterflies which wear all the tender freshness of the season is the Holly or Azure Blue, earliest of its tribe, and almost more beautiful than them all in its cerulean lustre, backed with a frosted silver more delicate than the seed-pearl pattern of the Common Blues of the June hayfields. White butterflies by the warm bank where the adders bask, sun-kindled Orange-tips on the white hemlock and pale mauve cuckoo-flower, and Holly Blues flickering headlong out of the sky that hides them across the dark sheen of their lustrous home-boughs—all the voiceless beauty of the mounting spring is in those wings, and we lose, when they vanish, the last of the childhood of the year.

The tints of the butterflies deepen as the year advances, and from month to month, by meadow, woodland and moor, the quivering pictures multiply that they inlay with their wings among the blossoms and verdure that each species loves. For each butterfly has its own flowers, its scenery, its weather; the Wood Argus, if carried by rough winds into the open meadows, is as sad and hurried a fugitive as Noah's dove upon the unrestful waters, and there is no home among the glades and shadows for the Marbled Whites of the downside, or the Graylings of the heath and wold. This dependence upon particular localities, and on the food-plants of the caterpillars which they support, has naturally had a great effect upon the increase and diminution of particular species. With the gradual drainage of the fen countries, the Large Copper has become wholly extinct, and the Swallowtail is now very rare and local; on the other hand, the Large and Common Whites undoubtedly owe their commonness at the present day to the universal cultivation of the cabbages and other garden plants on which the caterpillars feed. Before such green garden-

stuff was universally grown in England, these Whites must have been among the scarcer English butterflies. Even to-day, on such a remote fringe of British civilization as some of the outer Hebrides, it is strange to see how the Common White is a scarce insect haunting the few island gardens, while the desolate peat-moors are covered with the rare Large Heath, a butterfly of the waste and morass which is scarcely seen in England, and only in certain narrow and desolate areas. The disappearance of the British Large Copper is all the more to be regretted since it formed a distinct island species which had acquired, in ages of separate life, marked differences from the kindred butterfly of the Continent, which is still anything but rare. The British race of the Camberwell Beauty, the magnificent cousin of the Peacocks and Red Admirals, which also seems to have become extinct within the memory of men of middle age, had also a definite distinction of colour which separated it from the rich and stately insect still to be seen by every August visitor to the Alps or the Rhine. Even within the bounds of England itself, where there is no such rigorous separation of races as is imposed by the barrier of the sea or great mountain ranges, the tendency to such local differences is often seen at work. Those large and handsome moths, the Fox, the Oak Eggar and the Drinker (of which the two former are as sun-loving as the Brimstone itself) display a remarkable difference between the big, bright-coloured insects of the South, and the small, dark race of the North.

As April swells into May, and May into June, the tribes of the butterflies increase, until about midsummer and hay-time the greatest number of species are on the wing at any one moment of the year. In these earlier days of summer the brightest pictures of butterfly life are to be seen in the broken woods and copses, and all such clean, luxuriant places where the sun shines freely down upon a mixed carpet of many-coloured flowers, and green bosses of irregular verdure mounting to the tree-tops in the light. As the woods and copses deepen to the full luxuriance of May, year by year the quiet, blossom-starred rides are filled with the chequered red-brown wings of the two smaller Pearl-bordered species of Fritillary, first of their splendid tribe. No less faithful to the wood-ride and to May are the Large Skippers, spinning from leaf to flower on wings of a kindred golden brown, but of a hue not quite so rich

and warm as the true Fritillary glow. With the reddish and the golden brown of those sun-loving, companionable wings, there comes up linked in memory the whole bright yearly mosaic of the copses of flowery May. Everywhere, in the herbage of the rides, still richer with promise than with fruition, there shines the veined turquoise blue of the self-heal or prunella, and the lighter yellow spikes of dragon-mouthed cow-wheat; spotted orchises shine in the moister grassy places, and tall, stripling thistles begin to push skyward their tight purple knobs. On the blue and the purple blossoms quiver the rich brown wings of the Skippers and Fritillaries, and among them are always to be seen, in the true May copses of southern England, two slender-bodied Geometer moths, the cool, shining Silver-ground Carpet, which seems so common as to overflow into the daylight from its secret hiding-places, and that welcome and delicate harlequin, the Speckled Yellow, in his fancy dress of warm chocolate and orange. The Grizzly and Dingy Skippers are also abroad in May; but they are hardly such thorough copse-butterflies as their largest brothers, friends of the early Fritillaries, and their darker colouring does not combine so vividly and characteristically with the bright spring flowers.

The butterfly-pictures of the year grow no less distinct and characteristic as the verdure deepens under midsummer skies, though they multiply greatly in number, and spread from their earlier sheltering coverts across the whole face of the land. In the June copses, when the carpet of cow-wheat and prunella has been submerged by the rising growth, the frosted silver of the bramble blossom shakes itself to birth over the uncurling fronds of bracken; and when the cool, white bramble-blossom is born in the middle year, then the lordlier Fritillary monarchs come forth to bask and feast upon it in the glades. There is no more beautiful picture in the midsummer woods than the deep, golden rides of oak and hazel and springing bracken, where the High Brown and Silver-washed Fritillaries seem the proud and conscious monarchs, sailing down the fair-way of the sunshine on broad wings of deepened sunlight glow, or fanning and poising in ecstasy on some large June flower, while the sheen of the silver mail of their under sides flashes for a moment and is withdrawn again from the light. Now, too, in woodland and leafy places the midsummer sunshine

brings forth the smaller but beautiful Hairstreak butterflies, of which even the commoner species are curiously fitful and capricious in their periodic appearances. The Green Hairstreak is perhaps the most generally distributed of all this tribe; but it is the Purple Hairstreak that appears, in certain summers, in such large and brilliant companies as to become one of the most conspicuous of the butterflies of the wood. Often the high oak-crowns, or the lower sapling shoots, are alive in June with the shot purple of these busy little butterflies, dancing and resting on the sprays and extremities of the boughs; and sometimes the fancy takes them to descend in mass to the bramble-blossoms of some woodside hedge, where the orange-dotted grey of their under wings contrasts in singular beauty with the rich velvety bloom and flashing plaques of their upper surface. The bloom of the Purple Hairstreak is peculiarly delicate and fugitive, even for the gloss of a butterfly's wing; the lightest touch destroys it, and its frailty is only equalled by the dark velvety green of the larger, glade-loving Ringlet, with its varying series of fine golden circles, which flaps abroad, in unconquerable, somnolent hardihood, even under the wettest and most lowering skies.

In the week when the days are longest, the hayfields and hedgesides suddenly become alive with the common Large Meadow Brown, a butterfly which is even hardier than the Ringlet of the woods, and through long weeks of forbidding and flooded summers, is sometimes almost the only butterfly to be seen. It belongs to the same great general group as the Ringlets, a group which includes not only its own warmer-coloured kinsman, the Small Meadow Brown, but also the rare Large Heath and the very common Small one of every waste and grass-patch, the Wood Argus, the warm, stone-basking Wall or Gatekeeper, the Grayling of the July wolds and moorlands, and numerous butterflies more. Often by the very side of the Swiss glaciers, some sober, graceful little insect may be seen contentedly basking on the hungry boulders, and this will be one of the "Browns"; and on our own Cumberland mountains, never at a height much less than 2,000 feet above the sea, there dwells one dusky, orange-flushed little creature, the Mountain Ringlet, which is our special English representative of the Alpine butterfly fauna, and a relic of the glacial age. There is a rare pleasure in seeing this valorous film of life

emerging to battle with his peers and to rejoice in the keen, high mountain sunshine, when the cloud-world rolls away from the high Great Gable grass-slopes, or the shores of Sprinkling Tarn, under huge Bow Fell, and the eye ranges afar, over peak and cloven dale, to Man in the western sea.

But even before the swarm of homely, flapping Meadow Browns suddenly appear with new June suits in the meadows, the hayfields and open commons have been mustering their tribes of butterfly life. When the large ox-eye daisies begin to fill the fields with pools and lakes of silver, the Common Blues appear in their multitudes upon the blossoms of the standing grass, and are henceforward a constant feature of the summer. They are swiftly followed by many others of their beautiful tribe; and all of them are creatures of the grass fields and the blossoms of the grass, unlike the earliest Holly Blues of April, which haunted the outer sides of sunny shrubberies and thickets. Another brood of the Holly Blues appears, indeed, in late July or August; but with this exception, the Blues are characteristic butterflies of the fields and downs. Most noticeable among them are the large, pale-winged Chalk Hill Blues, whose filmy, clouded azure seems to reproduce the heat-dimmed lustre of the skies of their native July, just as the Holly Blue had the fresh skies of April in its wings, and the Common Blue the midsummer brightness of June. Most brilliant and burnished of all is the colour of the Clifden Blue, a local but not uncommon butterfly of southern hills, where, too, the dusky Small or Bedford Blue is often to be found, dancing or drowsing, among the wild down hay-crop of June. The common Brown Argus is a little Blue that is no blue, but has the upper surface of its wings of a rich, dark brown, with a border of orange dots; the male of the Common Blue is also much smaller and duskier than the female, but it has always a bluish-purple gloss in the middle of the wing which distinguishes it from the Brown Argus, often seen dancing beside it on the same fields and hillsides. From late May to the time of the autumn frosts the fields and heathy places are also brightened by the Small Copper, a kind of fox-terrier among butterflies, inquisitive, pugnacious, and full of vigour and brisk attractiveness. Sometimes in the heat of the dog-days, when the hay is all carried and the dewless meadows parched and bare, the Common Blues and Coppers

wander forth from their usual haunts, and may be seen exploring the unwonted closes of lawns and gardens, in quest of the measure of moist coolness which they need. For though butterflies are such lovers of sunshine, their delicate lives cannot endure the absolute drought of the desert; and in the fieriest July weather the beautiful sight may often be seen of a thirsty cloud of Blues or Whites fluttering and settling on a wet patch where water has been spilt in the dusty roadway, or at the moist edge of a pool or running stream.

Deep in the southern oakwoods in July the great Purple Emperors hold court round the airy crests of the boughs, amid a silence so songless and solemn that the rustle of their own high, flashing wings may sometimes be heard in the sunshine above the murmur of omnipresent insect life that is the warp and woof of the stillness. There is indeed a majesty about the soaring, indifferent flight of this brilliant butterfly of the forest solitudes which sets it apart on a regal pinnacle of distinction; only the Swallowtail can equal it in its conscious supremacy, its indifferent joy in spacious flight, and even the Swallowtail does not aspire to haunt for hours and days together only the loftiest, sky-fronting pinnacles of the oaks. As for the common reproach that the high-soaring Purple Emperor can be lured to earth by any carrion bait, provided it be corrupt and filthy enough, the accusation gains most of its force from the very unworthiness of its defamation. So far as it is true, it only deserves to be overlooked and unrecorded; and in point of fact, as little heed will commonly be paid by a court of Purple Emperors to any earth-born carrion that may defile the low shore of the wood beneath them as by the white clouds of heaven, afloat a little above.

As July passes into August, the whole fashion of nature takes a deeper and statelier range. The characteristic butterflies of latest summer and early autumn are those species of large size and rich depth of colour, of which the residue outsleep the dark interval of winter, to appear in the sunshine of the reviving year. Through August and September the deep red wings of the Peacocks, Tortoiseshells and their kin assemble in regal troops on the large flowers of later summer in the gardens, or on a few well-loved blossoms of the field or streamside, such as the tall hemp agrimony of the reed beds, with its mauve, cottony plumes, the marjoram flower of the

wide thyme-scented downs, and, most of all, on the pale purple, nodding scabious of the autumn pastures and dry slopes. The most splendid butterfly picture of all the year is one of these wide September hillsides of purple scabious blossom, thronged and crowded with the floating and fanning wings of hundreds of butterflies of a dozen different species, varying in hue from cool pure white to the Red Admiral's scarlet-bordered jet, and from the fresh radiance of the Blues and Coppers to the glowing, patterned splendour of the Peacocks and Tortoiseshells and Painted Ladies. Here a blossom bows beneath the weight of a silky-bodied Brimstone, there a Clouded Yellow flashes its rich saffron against the dark, earthy under-side of the strangely fretted wings of a Comma. Dragonflies cruise and hover over the length of the hillside meadow, grasshoppers spring and chirr among the hair-poised blossoms, and a busy plebeian crowd of hive and bumble bees shoulder the butterflies rudely from their foothold upon the mauve, button-like heads. Far and wide, where the individual blossoms of the scabious melt into a purple haze, the wings of this great company of butterflies shift and flash from moment to moment as they probe the honeyed flowers; one keen wing-profile, or brilliant eye-pattern, after another, catches the sight across the purple shimmer of the field, and only rarely this absorbing insect concentration is broken for a moment as a brilliant Peacock or Red Admiral leaves its last blossom and skims down the length of the slope, to fall again to the nectar of the scabious bloom. The long days of mellow September sunshine will soon be over, and all the brilliant butterfly congregation scattered and dishevelled in the storm and rain; scarcely, in the rare interludes of October warmth and brightness, will the last Red Admirals be seen bickering with sluggish wasps and outcast and perishing drones over the opening clusters of the autumn ivy-blossom. Let us take farewell of the butterflies in the brilliant scabious meadow of September, as they fill it with their beauty and life, and not seek to follow them further into the darkness and cold. For indeed the tombs of such of them as die are as unknown as the sepulchre of Moses; and those that sleep out the long sleep into the spring we may hope to see again, heralding the elfin cycle of the butterflies' year under a new and a lengthening sun.

V

BIRDS AS ARCHITECTS

> "Behold, within the leafy shade,
> Those bright blue eggs together laid!
> On me the chance-discovered sight
> Gleamed like a vision of delight."
> —WORDSWORTH.

AVERAGE canons of architecture do not appeal to the feathered designer, be they canons of beauty, economy or advertisement. One common motive underlies the design of every nest that was ever made—the motive of self-protection; pride of workmanship may be present—surely the longtailed tit is an honest workman and takes a real pride in his three weeks' task—or economy, as in the case of the nightjar, who furnishes a home for his mate by bestowing a simple blessing on some unobtrusive corner in the undergrowth of a wood; or comfort, as with the nuthatch, who screens his mate from excess of draught by plastering up the orifice in his chosen tree trunk till it will just allow ingress to his slender body and no more; or defiance, as with the rook, who knits a bunch of the topmost twigs into strongly braced girders for his brood's support; or impertinence, as with the robin, who delights to seize on some deserted utensil of man's discarding; or modesty, as in the case of the wren, who loathes ostentation of either situation, aspect or material. But amongst all these dissimilar artificers, the one strong instinct of self-preservation stands out clearly as the builder's first and foremost consideration.

In spite of this single similarity and these numerous diversities of taste, it is fairly clear that all the birds began their nest-building with tolerably similar ideals. The nest was to be soft; it was to be screened from the weather; it was to be near the favourite haunts, whether of pastime or hunting; it was to be either inaccessible to enemies, or calculated to escape their careless search. It is almost conceivable, for instance, that the woodpecker once made a round, untidy saucer nest stuck loosely in low trees like the blackbird's, until prolonged seeking of insects in the bark caused it to dawn on him that he might as well live nearer his work. The robin, we know, is still very liberal in his tastes, and utilizes almost

every conceivable habitation for his honeymoon, sometimes spreading a bed in an old kettle, sometimes nesting in a discarded tit's hole, sometimes actually taking the trouble to lay foundations of his own for a saucer nest in a bush. But as a general rule, either the feeding ground or the nature of the perch most dear to the bird fixes the situation of the nest. The situation fixes the character of the nest, because situation resolves the question of protective mimicry and assimilation to surroundings, or, on the other hand, inaccessibility to what is plainly to be seen.

Of all British bird architects, the longtailed tit is faced with the most difficult problem, and solves it most successfully. Safety is a terrible anxiety with him. He begins to build long before the hedgerows and shrubberies are green, and he is too tender to safeguard himself by building high, for that means exposure to weather. If there is furze at hand he will build in it, because it is green when he needs cover. If there are no furze bushes he will seek green thorn. If, as is usual for him in most years, the thorn is not yet green, he will still make his nest an exceptionally difficult one to find. He never perpetrates the solecisms of the year old thrush, beginning by building first a nest that is obvious to any small boy, then a second that no hungry cat can possibly miss, then a third which may escape with average luck. The tit is always successful in spite of all hindrances unless he has a very vigilant and determined adversary. There is no fresh greenery, and the evergreen trees are too coarse in the branch to be of service for the delicate nest he has to weave. So he is perfectly accustomed to set his nest in a web of dead, tangled creepers against an old summer house, or what not. Anywhere will do if there are only close set twigs of slender girth on which to sling his delicate pouch. An external adornment of moss and lichens, skilfully interwoven with the surroundings, preserves it from being seen when the sunlight is full upon it. And—mark his ingenuity—he has one trick that he shares with no other early nesting bird that builds in the open, for his nest is very, very seldom visible from below as a dark mass against the light. One would almost imagine that he hopped round it, above and below, viewing it from every coign and in every focus. Thus he secures safety theoretically, and in practice, too, for I have never yet marked a longtailed tit's nest and afterwards found it despoiled. Next he

has to allow for the number and size of his eggs. They are so many that his tiny mate would feel suicidally inclined if they were presented to her for incubation, spread out on a plate; and they are so small that a flick of her fairy tail would send them flying in all directions were they stored in the pan of an open nest. So he weaves a bag, with only a tiny opening at the top of one side for entrance. They lie pouched up together in the depth of the pocket, and his mate spreads herself over them, while the warm lining stores the heat of her eager little body, and yields it to the bottommost eggs of all. The same plan of construction keeps the wee bodies cosy when they issue from their shells, and none can possibly be knocked out of the nest, for it is often difficult to say exactly by what cranny the parents come and go, so closely are the upper walls woven together. A hard nest to find this, and a desirable one to be hatched in.

The rook is the exact opposite. He is select, exclusive, cliquy, an aristocrat who will herd with no rabble in the mean streets of the woodland, but will only consort with his equals in high places. Though lordly he cares nothing for outward appearances, and rather prefers an ancestral hall to a new and showy mansion. The nest his grandfather built is good enough for him; he will simply patch the walls clumsily with a few additional sticks, just to occupy the early days of spring, and renew the soft lining if the winter winds have dealt unkindly with it. But a new nest he will never build if an old one is to be had, unless the foundations have grown shaky or the walls gape to the weather. He satisfies the main instinct of self-defence by building aloft in spidery, creaking twigs, and has no fads or niceties at all.

The wood and willow wrens build late, and observe extraordinary caution. Why they build so low—often almost on the ground, and sometimes actually on it—is a puzzle; but if we seek a reason in the paramount instinct, it is that since they prefer thick country, they have to guard against stoats and weasels rather than against domestic marauders, whether biped or quadruped. Their nests are never obvious to the eye, and though one may chance to stumble on them now and again, the nest is hard to see even when the bird has flown out at one's very feet. But examining it, it is clearly best protected from the lower side, and so may well be designed to escape the notice of creeping enemies,

GREEN WOODPECKER.

From a water-colour by
Frank Southgate, R.B.A.

such as the two mentioned, and if it is off the ground, it may be obvious from immediately above, but is never prominent as a mass against the sky. It resembles a chance collection of dead vegetable matter either in coarse grass or in the lower tangle of the undergrowth, with which the thicket grasses mingle. Both these birds are exceptionally cautious in approaching their nests; and the woodwren in particular, hardly ever enters until she has perched a moment on some twig perpendicularly above the nest; and as watched by the field glasses she seems to give far more attention to the neighbourhood of the nest than to any obvious danger a little distance off. If the ground just round the nest is clear she will drop to it like a stone in full view of the watcher; but put some tiny article from your pocket in the grass near the nest, and it will be an hour before she can muster courage to descend and investigate.

The only bird that nests in holes and has any peculiarities is the nuthatch. The others choose any hole that is either inaccessible or concealed by position, and make a few rough preparations for comfort; the nuthatch insists on choosing a hole too large for it, and reducing it to the exact size required by clay plastering. I have made all possible tests of this instinct, and in vain. A pair used to come annually to my garden. A little amateur carpentering in the winter reduced their hole to the proper size, without adding any appearance of human craftsmanship, but they deserted it for a neighbouring tit's hole, that was too large, and plastered that up instead. Several holes were cut in their old tree the next winter, some too large, and some the right size; they employed in time every hole except those the size they required. I am at an entire loss to explain the additional instinct, nor, to my knowledge, has it yet been explained.

The missel-thrush shows an interesting evolution. Allied to the thrush and the blackbird it builds a very similar nest for very similar needs, and in all habits resembles its kindred. But it happens to breed a month earlier than they do, so far as any rule can be framed; at any rate it is the earliest to nest of the three. When the thrush and blackbird begin to nest there is either greenery or a hope of greenery coming to aid them in their concealment before the young have flown; the missel-thrush, on the other hand, starts earlier and obviously knows that the foliage will come too late to serve it. As a result

it builds a nest which might often be taken for that of a song thrush or a blackbird, and puts it in the hollow of a tree's fork instead of suspending it among the boughs of a large shrub or bush. If only the other two allied species did the same, their main problem would be solved; but they do not appear to have thought of it, whilst centuries of earlier breeding and presumably constant spoliation—seem to have acquainted the missel-thrush with this simple solution; at any rate, there is no other known cause to account for its variation from the accustomed methods of its tribe.

The nests of these few common species show the strength of this main instinct of self-preservation very accurately, and a deeper inquiry into local and individual peculiarities of structure, material and situation would probably evolve a definite series of minor instincts such as we can trace in the case of the longtailed tit; if so, the greatest hopes of discoveries lie in the variations discernible between two or three allied species, such as the thrushes or the warblers, or the buntings.

VI

THE VENUS EVE

"Sweet Hesper—Phosphor."
—TENNYSON.

A SPELL of radiant weather in spring brings in the Venus eves. These, if often at this season followed by hard glittering nights of frost, have a good deal of the rich feeling and colouring and sounds of the summer dusk. We have eve after eve of this character in April. I call them Venus eves because this planet, though hardly seen above the horizon more than an hour, is once again chief feature of the scene. Being now so near the sun, Venus is not yet clear of the afterglow; but as this fades, growing fainter almost perceptibly each minute, she burns brighter, till, at the moment of her setting behind the dark line of the earth, she is far the brightest thing in the sky.

Every moment of one of these perfect Venus eves spent indoors in the country seems a moment wasted. There is a positive foretaste of summer in the marked way in which wild life

is lengthening out the day, birds singing, even foraging, though the sun is down and the stars one by one are lighting up. The latest song-thrush on such an eve, however chilly the air, has scarcely ended by a quarter to eight; and then often, the hardest working of the rooks at this hour, by ones and twos, are slowly straggling home with the final supply of food for their sitting mates; even a few minutes later, whilst the hare is stealing softly through pastures that are soaked in dew, her sensitive ears hardly a moment at rest, odd exclamations, growing drowsier, no doubt, but still vigorous, come from the rookery.

If you cease for a few minutes to notice the changes in the sky and stars, and the behaviour of the birds, you will find, looking again, that the eve is over and the night fully in. This is a true charm about our English twilights—they are never stationary for any length of time, have none of the monotony of the night-long twilights of summer in more northern latitudes. In Norway the July night is all twilight.

Here the eye and ear are alert to a quick succession—even at midsummer, more so now—of changes, steps in that mysterious zone of shadow that lies between day and night. A choir of a thousand birds, all sorts . . . the tumult at the rookery . . . dwindling thrush notes . . . a last "quarr" or two from the rookery . . . the plaint of the partridge, whose form can no longer be picked out in the wheat field . . . the peewits in full cry: these, I think somewhat in this order, are the steps of sound that lead from sundown into dark at mid-April.

Then the steps in the lighting up and march westwards of planet and star: first Jupiter and Venus, alight at about the same minute, Jupiter shining, as he always does, very steadily, Venus throbbing a little in the gold and glow of sundown; next, in the blue, Sirius, throbbing far more intensely; then a star or two of Orion, his belt parallel now, at the time of lighting up, with the earth's horizon; Arcturus in the opposite, darker quarter of the sky; and, a few minutes later at most, Capella and Vega—and with them night. Put down thus in a row of dead words, there is not much to recommend the fleeting scenery of twilight; indeed, words, however you arrange and play with them, are irresponsive to the task; but nobody watches these wonderful spring twilights of England without very good reward.

VII

ANCIENT PONDS

"To a thinking mind few phenomena are more strange than the state of little ponds on the summits of chalk hills, many of which are never dry in the most trying droughts of summer."

—GILBERT WHITE.

IT is high noon on the top of a chalk down, and we are watching a flock of sheep slowly ascend the hill on which we sit. The members of the flock, consisting of about eight or nine score, move, as one, towards some definite goal.

It soon becomes plain that the sheep are heading for a circular depression a little above us, on the very crest of the down. We mount the few remaining feet, and find that the sheep have come to a dew-pond, or, to give it the alternative and better name, a mist-pond. They know the spot and have travelled hither nearly a mile to slake their thirst.

There is a little water in the pond, though the margin is sadly narrowed. At once it is borne in upon the mind that we have just passed through an exceptionally dry season, yet here is a cavity, only ten or twelve yards in diameter, still containing a store of precious liquid. And this is on the down top. Rudyard Kipling sings well on this subject:

Only the dew-pond on the height,
Unfed, that never fails.

A single hot day, to say nothing of the needs of the flock, would be enough, one imagines, to dry up the pond. However, one may apply the famous logic of the impounded man in answer to the argumentative lawyer, "But I *am* in the stocks!" The pond is not dry.

If we loiter long enough, mayhap some old shepherd will pass this way, and from him we may learn something of this ancient watering-place. Should he chance to be a young man, he will stammer and hesitate, and will require prompting before the name "dew-pond" or "mist-pond" is remembered. That will be unfortunate, for you shall wander for hours over this inviolate waste and find none other to ask, unless a primitive Briton emerges from the barrow hard by or from the ancient cultivation terraces on the next hill.

We shall be told by the shepherd that when the vale below is parched

and arid, horses and carts are sent, like Jack and Jill in the nursery rhyme, up the hill to fetch water. To give a specific instance—there is a mist-pond on Inkpen Beacon, in Hampshire, at a height of 900 feet above sea-level, which is said never to go dry though it constantly waters a large flock of sheep.

Readers of Gilbert White will recollect that he describes at some length, and with manifest interest, ponds of this nature situated above his house, on the chalk uplands of Selborne Common. The visitor may see the ponds of Selborne to-day, evidently as useful and as well supplied as they were 140 years ago. When the ponds in the coombes gave out, the sage tells us that one pond on the Downs was "never known to fail" though it furnished drink to three or four hundred sheep and twenty head of cattle. Practical farmers of our day state, moreover, that sheep, if left to themselves, prefer the pond water to that of the colder springs and streams.

Leaving theories alone for the moment we will see how the modern mist-pond is constructed. A man skilled in the art is engaged for the purpose. It has even been asserted that there exists a travelling band of pond-makers, but this is a little doubtful. The expert looks around for a suitable site, and scoops out the earth to the depth of a few feet, leaving generally a floor of chalky rubble. Then with well-chosen clay, he carefully puddles the bottom of the hollow and leaves it to dry. Perhaps a few stones are placed over the clay coat. If the ramming has been well done, the pond soon fills, although it is on record that, during prolonged winters, snow has been carted into the hollow to give a start when it melts. Animals must be prevented from treading through the clay cover while it is soft, else the pond will leak, being perforated at the beginning. Keep the floor intact, and the pond will fill, rain or no rain. Another method, formerly in vogue, was to make a foundation of beaten chalk, and on this to lay several coats of batter, composed of pounded chalk and hot lime. This "glazing" effectually prevented the depredations of earthworms. Nowadays, plain cement appears to be taking the place of the puddled clay. A properly constructed mist-pond will remain serviceable for fifty or sixty years, when it must be puddled anew.

If we ask the man of science how the mist-pond is supplied, he will say that the water is chiefly provided

by mists and fogs. Dew, if we interpret the word strictly, is of less importance, hence the objection to the name dew-pond. The pond of course receives a little rain at times, according to the area of the cavity, and the angle of the sloping sides, but this amount forms a small proportion of the total. Ponds are ofttimes intentionally constructed on the shoulder of a hill, or near the junction of two spurs, in which case much rain is directed to the hollow, which becomes a "rain and mist-pond."

That fog and rain are the prime agents in the supply of a real mist-pond is admitted. The Rev. J. G. Cornish made experiments on the Berkshire Downs by means of notched sticks which he thrust into the pond and examined night and morning. The water level was found to rise as much as an inch or two in a single night, though no rain whatever had fallen; the increase was due to dense fog. When there was a heavy dew, but no fog, the increase was less. Observations like these set the matter beyond cavil. No one who is acquainted with the chalk downs would care to dispute the intensity of the mists. Shepherds and those whose business calls them forth in the early hours of the morning often return soaked to the skin. The wayfarer who rises betimes could tell a somewhat similar tale.

When we come to ask why such a large amount of moisture should be concentrated on the small area of the mist-pond there is a hot dispute. Some writers airily dismiss the problem as very simple, though their own explanations are by no means of that nature. Others assume the action of electricity, others again invoke the aid of the dust particles floating in the atmosphere. The question has been discussed at a meeting of the British Association, though even there unanimity was absent. Amid the babel of voices a general principle or two may be heard which may give the clue. The upper surface of the water in the pond is cooled by radiation, and convection currents are thus set up. In other words the colder layers of the surface descend, and the warmer water from below rises to the top. This goes on until the contents of the pond are colder than the surrounding rocks and soil, when condensation of the aqueous vapour, whencesoever arising, goes on at a rapid rate.

Mr. Clement Reid and other competent observers state that a tree—beech or oak, or preferably a stunted bush of holly or hawthorn, will facilitate the deposition, especially if it

be planted at the south-west side of the pond. The planting of such trees is not, however, general, though common.

Gilbert White has already been cited on the question of these old ponds. Literary references can be carried back a little before his time, and then all direct evidence ceases. There is nevertheless little reason for doubting that sheepmasters from mediaeval times onwards have been acquainted with these ponds. The phenomenon of condensation on the hills must have forced itself upon their attention, and they would not be likely to neglect such a cheap and constant supply of water.

But there is a more fascinating phase of the subject. In the vicinity of ancient earthworks, and in some cases within the fortifications themselves, the trained eye of the archaeologist may detect hollows which probably represent prehistoric mist-ponds. Where old-world cultivation terraces and groups of hut circles abound, there, too, similar relics are occasionally visible. Some of these hollows doubtless represent excavations for chalk, others may mark the site of underground granaries. There remain a few which do not seem to fall in either of these classes. There is a fair case to be made out for the existence of some sort of mist-pond in the Neolithic and Bronze Age periods. The modern theory teaches that these old camps were often refuges for men and cattle in times of danger. There is no proof that water was then much more easily obtained on the hill top than it is to-day. Spring there was none at those heights. The modern farmer uses the mist-pond without understanding how it is filled, hence it is no objection that the early Britons were ignorant in the matter. Water they must have had, and the mist-pond seems the only means by which they could have been supplied.

Let us suppose a tribe, with all its flocks and herds, shut up in Maiden Castle, Dorsetshire, or in the Yarnbury Camp on Salisbury Plain. Even were the siege to last only two or three days, it is evident that a large quantity of water would be required. A water famine would prove a terrible calamity. To visit springs or streams at the foot would be impracticable. Even could stealthy visits be made to those waters, by what means could a sufficient quantity be conveyed to the summit of the hill ?

Apart from the question of inter-tribal attack, we must remember that our earliest cultivators were most

likely dwellers on the hill top. On the hill tops we find their remains, barrows, camps, fields, homes, implements. Not until historic times, when the later Celtic peoples and the invading Teutons settled in our country, did farmers begin to till the lowlands. Hitherto the fear of bears and wolves had been a hindrance. Stone hatchets, and even cutting tools of bronze, had proved very inefficient for felling the forests. Swamps were common. Therefore the early folk favoured the heights. When the land in the vales came under the plough, the water-supply was a simple matter. It thus seems probable that the custom of making mist-ponds fell into disuse, and was only revived when the downs were again occupied as huge sheep-walks.

The old Britons of the hill top are gone; they cannot give evidence in person. But we, who in no small degree are the offspring of these ancient peoples, must feel a glow of pleasure in calling forth the mist-ponds as dumb witnesses of prehistoric customs.

VIII

THE MAKING OF SCENERY

"From the depths of the waters that lighten and darken
With change everlasting of life and of death . . .

—A. C. Swinburne.

A SEABOARD with no bastions of steep and rugged rocks; but only broken lines of low, friable cliffs, once smugglers' haunts, and now the home of martins; and stretches of drifted sands whose dunes, knotted with sedge and decked with sea-holly, poppy and convolvulus, are separated by "fulls" of rolled pebbles from marsh, mere, and warren. Here gather the seabirds in whose shrill, melancholy note there is refrain of the wind in the trees and the waves breaking on the shore. Commons fragrant with gorse and heather, and carpeted with bracken, meet park and woodland where flourish ancient oaks (one veteran, still bringing forth fruit in old age, counts sixteen centuries), symbols of the nation's heart when ships were built of it, and venerable seats of widespread Aryan cult. The rich clays and heavy loams secure their heavy crops of cereals to the farmer; alder and poplar-fringed streams widen into estuaries rich in rare bird life; estuaries slowly silting up by the tide-brought ooze, and becoming the dwindling

"broads" on which picturesque wherry and trim yacht pursue their business or their pleasure.

A flat, here and there undulating, country, broken by pine-crowned knolls or pine-encircling barrows; its level horizon giving full glory of sunrise and sunset; a country bounded westward for centuries by undrained swamp and fen, and therefore retaining that insular character which stereotypes places and peoples shunted, as it were, off the main track of development, and which, in many a nook and corner keeps primitive features dear to the lover of nature and the student of the past.

Those who observe and question are to-day a growing company. Our forefathers, notably the country born and bred, were keen-eyed for the things around on which life's needs depended, but their heads rarely, if ever, struck the stars. With days "linked each to each by natural piety," all that was worth knowing, or that they thought it essential for their souls to know, had been revealed by "holy men of old, who spoke as they were moved by the Holy Ghost." The Book told them that the world, and everything therein, had been created in six days, and they believed it. To question was to doubt, and "he who doubteth is damned." An ingenious prelate had made certain calculations which established the date of the Creation as 4004 B.C.; and precision, in one momentous detail, had been added to Archbishop Usher's figures by a Vice-Chancellor of the University of Cambridge, who affirmed that "man was created by the Holy Trinity at nine o'clock on the morning of October 23, 4004 B.C." Thanks to astronomers, geologists, and anthropologists, *nous avons changé tout cela*, and in so doing, have widened the scope of wonder, and the area of mystery. The displacement of the earth as the supposed centre of a universe in which its millions upon millions of miles of orbit round the sun are but as a pin's point viewed from certain "fixed" stars, has been followed by the displacement of man as the creature for whom sun, moon and stars were made. Hence all thought, all speculation, has not been merely reformed; it has been revolutionized. Hence, with eager and restless gaze, knowing so much, we would know all, piercing things that we may reach the secret of the Eternal, and, baffled in that, would, at least, learn what history they hold concerning the processes which have made them what they are.

This is a "revival," the revival of

the Greek spirit of inquiry which was arrested for at least a thousand years. It is to the immortal renown of the Ionian sages that they "left off telling tales" to search into causes. They shared the belief that the earth was a flat circle, encompassed by an ocean whence flowed the seas and rivers. Observation of its universality and states have prompted the guess—Thales was its author—that water was the primal element of which all things are made. There was potential truth therein, for without this astounding compound of invisible, tasteless gases, life could not have been; and, in the face of the proved fundamental relationship between the organic and the inorganic, where can we say that life begins or ends? Strange, that what is the solvent of plant and animal is the stay of their existence; the mobile sustaining the relatively immobile. To it the moulding of the globe's surface is mainly due, and if, as Ruskin says, "in considering ideas of beauty, colour, even as a source of pleasure, is feeble compared with form," great is man's debt to rain and river, sea and ocean.

Here, in these islands, travel where we will, our tread is on the bottom of ancient waters, indeed, upon seabed overlaying seabed. Hidden, some in outcrops here and there, by more recent layers, are the chalk deposits that stretch from our eastern coast to Salisbury Plain; deposits laid aeons before Britain "arose from out the azure main," when the water covered the Continent, and when parts of what are now France, Spain and Italy were islands in a central sea. Then come changes as mighty as they are obscure, for too often, Nature, like the Cumaean Sibyl, has destroyed her records; and all that is known is that the chalk became overlaid with sands and clays, most noticeable among these, the so-called London clay, because the Metropolis stands upon it. Teeth of sharks, carapaces of turtles, scutes of crocodiles, and other fossils found therein, witness to warm climates in these northern zones. Upon these clays rest the loose sands and gravels locally known as "Crag," laid in shallow waters yielding enormous numbers of shells, and also bones of the mastodon and tapir, and other remains. Colder grew the temperature, with shrinking of the waters, till where now the shallow North Sea rolls—six hundred feet at the deepest—there spread a valley through which flowed a river whose descendant is the Rhine. Researches

(*To be continued.*)

MOORHEN.

From a water-colour by
Frank Southgate, R.B.A.

during recent years indicate that this ancient river-channel ran from the present Hook of Holland to East Anglia, and then turned northward. The remains of what is known as the Forest Bed show that oaks and elms, firs and beeches, with lush undergrowth, then flourished, and among the obscure questions of palaeontology is the explanation of the commingling of fragments, never complete skeletons, of southern forms, as the elephant, hippopotamus, tiger and hyaena, with northern forms, as the musk ox, elk, and walrus. Unwelcome are the catches of such relics, which, escaping the "chafing gear" of the smacksmen, play havoc with their nets. Leaving problem for fact, it is known that arctic conditions at last prevailed. The ice fingers of the Glacial Epoch gripped the northern hemisphere, and the mighty glaciers, as they moved southward, brought as cargo the comminuted stuff named Boulder clay. From this come the miscellaneous heaps of alien stones of the roadsides and the fields; these, commingled with the waterworn flints yielded by the chalk, helping to make up the shingle terraces that fringe the seashore. These glacial clays are topped by the latest deposits, muds and gravels laid down by the rivers flowing into the North Sea, which reappears on the geological map; the gravels yielding the roughly worked flints that served man as tools and weapons until the ages which brought the discovery of metals.

Such, then, in aridness of summary, are the changes whose results are the features described at the outset of this paper, and as we strive so to read the story of an ageless past that the landscape may become as a familiar face, the thought is brought home that unlike Art, Nature suffers not by analysis. In the discovery of her works and ways, wonder attends on wonder; the deeper we penetrate the more elusive does she become. In this lies the charm. Better the pursuit than the quarry, for the attainment of full knowledge might beget atrophy of the soul. As it is, ever on the quest, we have, as reward, increase of desire through delight, and quickening of inquiry. At our feet lies many an answer. As the Eternal revealed its presence to the prophet, not in the "great, strong wind that rent the mountains and brake in pieces the rocks," neither in the earthquake nor the fire, but in the "still, small voice," so the operations of Nature are to be sought in the quiet rather than the tumultuous agencies which have modelled the earth.

To observe what is going on around and beneath us is to touch the illimitable past.

> To see a world in a grain of sand,
> A heaven in a wild flower,
> Hold Infinity in the palm of your hand,
> And Eternity in an hour,

sang William Blake. And to know the history of a piece of chalk or sandstone or granite or pumicestone, is to have the story of rock-formation, fire-fused or water-laid, at our fingers' ends. In the rolled pebble; in the glistening sandgrain; in the chambered shell or the striated boulder; from the rain puddle to the great sea itself which "no man can tame," there is the story of energies which have known no pause, which were potential in the nebulous stuff of which all things, both living and the dead, are spun; energies which, Proteus-like, are ever changing their modes, and passing, the one into the other, but are extinguished never.

With the key supplied by that story, what once was dreaded becomes dear and desired, because knowledge, like "perfect love, casteth out fear." Herein we of these latter days have a coign of vantage, not only over the ancients, to whom mountains were haunts of demons, and of terrible beasts, but over men of recent time. To the delightful, if romancing author of *Ho-Elianae, or Familiar Letters*, the Pyrenees were "huge and monstrous excrescences of Nature," although "not so high or hideous as the Alps." The poet Gray describes the "horrors of Mont Cenis," and Goldsmith talks of "the dismal landscape of the hills," while, less unexpected from him, Horace Walpole writes of "the uncouth rocks and uncomely inhabitants of the Alps."

Here, by this treacherous coast of shoal and surf, where

> Tamarisks bow their heads, compelled
> By no ungentle force,
> While the air a sunny sweetness held
> Mingled of sea and gorse,

and in scattered villages inland, the elements have fed superstition, and many a barbaric belief and custom, carefully hidden from parson and schoolmaster, sways, and long will sway, the life of the unlettered. That sublime saying, "Ye shall know the truth, and the truth shall make you free," has intellectual as well as spiritual application. And to this they can best bear witness who have escaped vacuity of life in search after wisdom.

"For happy is the man that findeth wisdom, and the man that getteth understanding. . . . She is more precious than rubies, and all the things thou canst desire are not to be compared unto her."

IX

THE LIFE-STORY OF A BADGER

"To some old loamy barrow, in bramble bank,
Of broc or fox."

—CHARLES M. DOUGHTY.

HE was born near the foot of a precipitous headland which a wall shut off from the neighbouring farm. The isolation of the sett had induced his mother to litter there, and when after the birth of her two cubs day succeeded day without any intrusion from an enemy, she all but shook off the misgivings that had at first constantly haunted her as to their safety. So great indeed became her confidence in the security of her surroundings that she even ventured to take the cubs outside the earth that the sun might bathe them with its rays. Whilst they slept she kept watch and ward over them. Occasionally, wearied by her roamings through the dewy mowing-grass and lulled by the cries of nesting wild-fowl, she would fall into a deep slumber, awaking in a fright at the thought that her cubs might have been stolen from her side, but becoming composed when she saw them still on their couches amongst the seapinks, where they lay blinking at the sunset.

In rainy or chilly weather she kept to the "earth" where, as night approached, the cubs shook off their drowsiness and awaited her summons to go out to play. At the call they followed, frisking at her heels as she led to the one bit of level sward where they could enjoy their gambols without fear of falling over the cliff. The mother joined in all their games and frequently left herself bare time to reach the foraging ground and get the food she needed, before dawn stole over the uplands and hurried her home. In her absence the cubs remained in the "earth," contentedly enough at first, but with an ever-growing discontent at being left behind. She turned a deaf ear to their plaints, however, until she thought the young creatures fit to accompany her. Then she took them, mad with delight, up the zigzag to the summit of the headland.

Full of wonderment at the strange world to which they were being introduced, the cubs were slow to settle to their lessons, but when they did, they profited so quickly by their mother's instruction that in a few nights they became adept in turning over the stones and muzzling amongst the

heather-stems where the insects harboured on which they were chiefly to subsist. The old badger, jealous of their safety, kept listening whilst they foraged, but nothing happened to justify her fears. The only sound that even caused the cubs to prick their ears was the bark of a fox on the hills beyond the homestead.

Before a fortnight had passed every yard of the cliff-top had been ransacked for prey again and again, till, finding it hard to pick up a living, the male cub, ever more forward than his sister, longed to reach the field he could see between the crevices of the piled stones. He knew it was forbidden ground, but that only made it the more tempting; and at last seizing the opportunity when his mother was grubbing in a thick bush, he scrambled over the wall and succeeded in getting half-way across the enclosure before he was discovered and brought back. The incorrigible fellow broke bounds again the next night; whereupon his mother, recognizing that the headland was exhausted as a feeding ground, brushed aside her apprehensions and led him and his sister to the cultivated land where food was abundant.

There they might have roamed and regaled themselves without molestation had they kept to the pastures, but unfortunately, in their extended round, they encroached on a piece of wheat and not only made a wide road across it but, what caused even more damage, rolled in a dozen places on either side of their track. This favourite resort of the badgers occupied a remote corner of the holding and, partly perhaps because of this, remained long unvisited by the farmer. At last, however, the trespass was noticed. At a glance the farmer knew who had wrought the havoc and as quickly formed his plan of retribution against the delinquents. During the dinner hour he said to his son in a voice that showed he was still angry: "They badgers have made a tarble mess of the Five Acres: set a 'grain' in the brambly corner by the Tinners' Field: I see they come in there"; and soon after milking-time the son set a running noose at the mouth of the creep. Three nights later the female cub was caught, and in the morning the farmer found her in the wire dead.

Henceforth the old badger centred all her care and affection on the surviving cub. Abandoning that dangerous beat, she took him in every other direction, and before the summer had passed made him acquainted with every hill and valley for a radius of five miles about the sett. Once they reached a croft six miles

away and just as they were about to turn homewards came on what they had for over a week been seeking in vain—a wasps' nest. It was very late, but the temptation to stay and dig it out was too great to resist, and the old badger, conscious that much delay meant lying out, made frantic efforts to secure the prize betimes, so that they might reach the "earth" before sunrise. But the ground proved hard and rocky; and though to kill the wasps that kept stinging her, she rolled but once, she was fully two hours in getting at the combs. The cakes, full of grubs, were worth all the pain and trouble in the opinion of the cub, who, if he had little part in the labour of excavation, came in for a big share of the feast. He thought as he swallowed the luscious morsels that he had never eaten anything so delicious, not excepting the ripe gooseberries in the farmer's garden, the night his mother overturned the big hive. After gobbling up the last bit of comb, the slow-footed creatures, without stopping to drink in the stream hard by, made for their distant home as fast as their pads could carry them. But the race between them and the sun was hopeless. Many hills stood in their course; and they had scarcely completed half the journey before the dawn, gilding the crags, warned them to seek immediate harbourage. To lie down in the stubble they were crossing was out of the question, so they hurried over the brow and, threading the loose rocks, took to the brake that mantled the slope below. There they curled up under the densest of the furze and tried to compose themselves to rest.

Despite the pain from the stings in her nose, the old badger soon fell asleep; but the cub, though unstung, lay awake listening to the strange, disquieting noises that from time to time rose out of the valley. Now it was the rumbling of a cart, now the cries of the miller's wife scaring the pigs from the garden, and late in the forenoon, when he was about to doze, the braying of a jackass on the lower edge of the brake. This was more than his nerves could stand, and in terror he nestled closer to his mother and wished himself back in the sett. But the worst was over; in the hush that succeeded, nothing could be heard but the drowsy drone of insects and the plashing of the water from the wheel, sounds that both allayed his fears and served him for a slumber-song. He was thinking of wasp-combs when sleep claimed him. The sun had gone down before he arose and followed his mother to the hill-crest beyond the stream, whence rugged

downs stretch to a craggy ridge that had the harvest moon above it. The line they took led straight for home, but half-way over the heathery waste they turned aside in search of food, and on reaching the top fell again to foraging, their silvery-grey coats harmonizing with the hoary boulders amongst which they quested. Presently the badger called the cub to her and, descending the abrupt slope, made for the cultivated land and so came to the farm over which they had so often roamed. There was no sound from the homestead as they stole by, and before a cock crowed they were near enough to the cliffs to catch the cries of the seafowl, astir in the grey dawn. Side by side they climbed the boundary-wall and crossed the summit of the headland, but on reaching the dizzy zigzag leading to the sett, the cub dropped behind his mother and remained on the heap after she had disappeared into the "earth." There he stood turning his head quickly from one to other of the two islands whence came the clamour of the fowl, till presently, and after a glance up the cliff, he too passed out of sight.

Both were glad to be abed in the safe den once more, and never again, whilst they remained together, did they sleep in any other lair. It is true that they narrowly escaped lying out on the occasion when they journeyed to a distant valley and feasted on the beechmast with which a gale had strewed the ground. That, however, was a mere accident. Indeed, it was the fear of being belated that induced the badger to essay a short cut where she wasted much time before she could extricate herself from the maze of hollows in which she became involved. She was glad to leave the bewildering place behind; but the cub was so pleased with it, and especially with a sort of refuge in the midst of it, that he unhesitatingly bent his steps thither when driven from the sett and forced to seek a home for himself. It was not his mother who expelled him, but the savage old boar she had taken up with, who would not allow the cub to sleep in the "earth" a single day after he was established there.

Late on a black December night he left the headland never to return. The loud chatterings of the tyrant were yet ringing in his ears as he crossed the boundary wall, but the recollection of the delectable spot ahead cheered him, and by the time he was over the ridge he was more troubled about the direction he should follow than by the thought of the brute he was fleeing from. On, on he travelled, and, as luck would have it, straight for his destination, which he

THE BADGER.

From a photograph by
Charles Reid, Wishaw.

reached in the early hours of the morning. He could not mistake it. There was the jagged Cairn, there at its foot was the ring of sward circling the furze he had twice rounded on that eventful night, and further, there was the stream whose babbling had caught his ears and shortened his quest. He was in no mood for foraging, so, after he had quenched his thirst, he made for a crevice in the Cairn and curled up at the end of the rift it led to. He was very happy to be where he was, and yet he could not shake off the sense of forlorn abandonment that haunted him until fatigue had its way and he fell asleep. He was awake at dusk; but not before the stars showed did he sally out and begin driving a tunnel under the Cairn. He continued to work at this nightly until its length and the den he fashioned at its extremity were to his liking. With this "earth" he was content only for a while, and before March was out he had enlarged it into a sett with three entrances and with galleries and dens on every side.

The heaps of fresh soil he had fetched out caught the eye of a vixen on the look-out for a home, and finding the unoccupied chambers dry and clean she decided to litter in one of them. The badger did not resent the appropriation of a corner of his roomy abode nor complain of the squealing of the whelps when they came, but he did envy the vixen the young rabbits, the goslings, and above all, a fine white cockerel which the dog-fox brought her. It was whilst foraging on the downs that he used to meet Reynard, frequently at first, but less so as time went on, till at last when the cubs were able to accompany the vixen on her rounds he lost sight of the fox altogether. Then he began to be annoyed by the habit vixen and whelps had fallen into of returning late to the sett and disturbing his rest. For several weeks he bit his paw and said nothing, but when, after harvest, bad hours became the rule and not the exception, he resolved to put up with such unnatural ways no longer. The plans of the wild creature, however, like the plans of man, are often upset by something quite unforeseen; and so it was with the badger.

On the very morning he returned to the sett to await the dissolute crew and have it out with them, he found to his dismay that the "earth" had been stopped. At the sight he forgot all about the foxes, and, after vainly trying to scratch a way in, he stole down to the brake, lay up under a rock in its midst and fell soundly asleep. Before the sun

was far above the horizon he was rudely aroused by a pack of fox-hounds who would have worried him to death had it not been that the narrow approach to his refuge made it impossible for more than one hound to reach him at a time. So he was able to keep them at bay and even to inflict more harm than he received. But the rock could not save him from the pandemonium which assailed his sensitive ears ; and this he had to endure until his maddened assailants were whipped off by the huntsman. Despite this experience the badger kept to the sett, though afterwards, on finding the holes stopped, he shunned the brake and sought the old harbourage in the recess of the Cairn. Thus he escaped further persecution from the hounds and would have been as happy as the winter nights were long, but for the farm labourers and dogs who ravaged that part of the countryside until they had killed every badger except himself.

All October through, the badger, dreading to be taken by these midnight marauders, never once ventured to roam beyond the edge of the downs, but in November a longing for the companionship of his kind possessed him so strongly that he swept aside his fears and went boldly forth in search of a mate. Day after day he slept out, night after night he resumed his quest, and at last met with a sow of his own age. But his troubles were not yet at an end, for scarcely had he exchanged licks with her before another boar came up on her line and rushed at him like a thing infuriated. The fight that ensued lasted till the sun rose, when his rival was glad to drag himself away from the scene of conflict in order to escape further punishment. The badger was more blown than hurt and, as soon as he recovered his wind, was all for returning to the sett under the Cairn, but the sow would have him come to her own country, and in the end he yielded and followed whither she led.

And what a wild country it seemed, even in his eyes, with its tangled valleys, its rugged slopes and never a patch of cultivated ground. Wonder changed to amazement when he came on the waste-heap of an abandoned mine, a heap to which his excavations were as worm-casts. He was even more struck by the vastness of the sett that was to be the home of himself and his mate. It covered over an acre of ground and was so riddled with holes that the earth-stopper had long given up trying to stop it. So the badgers never saw the light of his lantern, nor indeed any light but that of the moon and stars until summer brought glow-worms to

dot the brakes and will-o'-th'-wisp to dance over the bogs. The country, it is true, had one serious defect; food was scarce whilst winter lasted and was never very plentiful at the best of times. At the season of bud-bursting, however, the female tore herself away from the whelps and showed her mate the woodland in the low country where wild hyacinths abounded. There they feasted on the delicious bulbs that were to be had for a few scratches of their powerful claws, and thither later they led the cubs, whose delight it was to wander amongst the trees and, following their parents' example, to stretch themselves against the bole of an oak. The woodman saw the marks of their claws, the pits they dug and the prints both big and small where the stream crosses the ride, but he laid no trap and set no snare.

In that wood and over the wild waste about the sett the badger wanders to-day. Fear no longer shadows his steps and it is likely that he will live to the full span of years, that his last trail will lead to the cave, unknown to man, where for ages his kind have crept to die.

X

SOME MAY FLOWERS

> "This sweet May morning
> The children are pulling
> On every side,
> In a thousand valleys far and wide,
> Fresh flowers."
>
> —WORDSWORTH.

IN the olden times our forefathers were wont to celebrate the first of May with much rejoicing. The quaint customs associated with the festival have mostly died out, but here and there in retired country places the children still perambulate the village with garlands and may-poles, as in the days of the author of *The Compleat Angler*, who, as he "sat under a willow-tree by the waterside, and looking down the meadows, could see, here a boy gathering lilies and lady-smocks, and there a girl cropping culverkeys and cowslips, all to make garlands suitable to this present month of May." We must not stop to inquire what particular plant our "honest fisherman" meant by "culverkeys," for it would only lead us into a long and learned discussion. And now is the season when, as Shakespeare says,

"Daisies pied, and violets blue,
And cuckoo-buds of yellow hue,
And lady-smocks all silver white,
Do paint the meadows with delight."

Now, in the glowing language of Tennyson, the golden kingcups shine "like fire, In swamps and hollows gray"; now "the little speedwell's darling blue" may be seen on many a mossy bank; and in the copses the bluebells are so abundant that the very heavens seem "uprising from the earth."

With the coming of May the earlier spring flowers are quickly disappearing. The primroses are long past their prime, and will soon be entirely gone; but the oxlip and the cowslip, near relatives of the primrose, are May-flowers. The name "oxlip" is sometimes applied to hybrids between the primrose and the cowslip; but the true oxlip, the *Primula elatior* of Jacquin, is a distinct species, and often occurs in districts, as in parts of France and in some of the Swiss Alps, where the primrose and cowslip are unknown. In England the true oxlip is confined to certain localities in the eastern counties, chiefly in Essex and Suffolk. The plant was first brought before the notice of English botanists in the year 1842, when it was discovered in the wet meadows near the bridge which crosses the river Pant at Great Bardfield in Essex—a parish, it may be noted, in which the primrose does not occur. "These oxlips," wrote the finder, "grow by thousands in the meadows, and in moist woody places adjoining: in one instance a meadow of about two acres is entirely covered by them, being a very mass of yellow bloom." The discovery aroused considerable interest at the time, and many distinguished botanists visited the retired Essex village to see the plant in its native locality. In the adjoining parish of Finchingfield, of which the famous Stephen Marshall was Vicar at the time of the Commonwealth, the "Bardfield oxlip," as Darwin calls it, is to be found in several of the woods and copses. In one spinny, close to the old farmhouse where Francis Quarles often stayed with his friend Edward Benlowes, and where, according to tradition, he wrote his *Emblems*, the oxlip is abundant. The poet must have often seen it; and so must the strange squire who lived at the Hall hard by, and who, as we learn from his tablet in the village church, was "master of himself so much that what others scarce doe by force and penalties, He did by a voluntary constancy, Hold his peace for seven years."

Unlike the oxlip, the narrow-leaved lungwort or bugloss-cowslip (*Pulmon-*

aria angustifolia) attracted the attention of the early botanists. This interesting plant, not to be confused with the garden species, has long lanceolate leaves spotted with pale green, and terminal cymes of flowers, resembling in shape those of the cowslip (hence one of its English names), but of a changing purple colour. The corolla, which is "reddish in the bud, first becomes violet, and lastly ultramarine blue of intense brilliancy, but fading ere long into dull blue or purple." The bugloss-cowslip is often abundant where it occurs, but, like the oxlip, is confined to a few localities, being found in Great Britain only in the Isle of Wight, the New Forest, and in one or two woods in Dorsetshire. It was first discovered by Mr. John Goodyer, a botanist of great distinction, "on May 25, Anno 1620, flowering in a wood by Holbury House in the New Forest in Hampshire." This entry is repeated by most of our early authorities, who rightly regarded the plant as one of unusual interest. It is still plentiful in the wood where Goodyer found it, and in other parts of the New Forest. In the neighbourhood of Beaulieu Abbey it is specially abundant; and may be found in all the copses near the picturesque remains of the once splendid monastery. On the other side of the Solent, in the beautiful woods which formerly belonged to the monks of Quarr Abbey, a Cistercian establishment like that of Beaulieu, the lungwort is the characteristic species. As its name indicates, the plant was formerly regarded as "a sovereign remedy against infirmities and ulcers of the lungs"; and doubtless in pre-Reformation days many a concoction of "the blue and crimson flower" was prepared by the good brethren of the monastery for their afflicted neighbours in the district around. In addition to its name of lungwort, the plant is called by our early botanists "the long-leaved Sage of Jerusalem" and "the Sage of Bethlem"; while in modern times it is known as "the blue cowslip" in the Isle of Wight, and as "Joseph and Mary" among the children of the New Forest.

Sometimes, early in May, in moist shady places, growing at the roots of hazel among the decaying leaves, the curious Toothwort (*Lathræa squamaria*) may be found. It is a strange-looking parasite, "in forme," as old Gerarde well describes it, "like unto *Orobanche* or the Broom-Rape and also in substance, having a tender, thicke, tuberous, or mis-shapen body, consisting

as it were of scales like teeth (whereof it tooke his name) of a dusty shining colour tending to purple." It is a rare plant, and withal difficult to find, haunting chiefly the deep recesses of the woods, and easily escaping notice among the fallen leaves. But parasite though it is, the Toothwort possesses a remarkable power of maintaining its position on the same spot for a long number of years. Towards the end of the sixteenth century Gerarde found it "growing in a lane called East-lane on the right hand as ye go unto Cockes Heath": the flesh-coloured spikes came up this spring on the exact spot where the old herbalist found it. John Ray recorded it as "growing in a shady Lane not far from Darking in Surrey, plentifully": the plant still flourishes in the same locality.

The Liliaceae, or Lily-tribe, would doubtless be considered by many people as the most attractive Order of British plants. It numbers among its members many rare and interesting species, some of which, because of their beautiful flowers, are often cultivated in our gardens. Among its choicest members may be mentioned the exquisite Mountain *Lloydia*, frequently met with in the Alps, but in Great Britain confined to the rocky ledges of the Snowdon range; the yellow Star of Bethlehem; the variegated *Simethis* found some years ago near Bournemouth; and the fragrant Maianthemum, or May-lily, abundant and probably indigenous in one locality in Yorkshire. But other species, not less beautiful, may be found during the month of May in comparative plenty. Allusion has already been made to the Bluebell, one of the commonest and most charming of our May flowers: to the same Order belong the Lily-of-the-valley, the exquisite Vernal Squill so abundant in places on the sea-cliffs at Cornwall and South Pembrokeshire, the Fritillary or Snake's-Head, the Wild Tulip, the Grape Hyacinth, the Herb Paris, and Solomon's Seal.

This latter plant (*Polygonatum multiflorum*), one of the most graceful species in the British flora, is common in many of our Hampshire woods. Its English name, Solomon's Seal, recalls the quaint belief, general among our forefathers, in the "doctrine of signatures." This curious fancy is thus stated in a scarce herbal of the sixteenth century entitled "The Art of Simpling": "Though sin and Satan have plunged mankind into an ocean of infirmities, yet the mercy of God, which is over all His workes, maketh grasse to growe upon the

mountains and herbes for the use of men, and hath not only stamped upon them a distinct forme, but also given them particular signatures, whereby a man may read ever in legible characters the use of them." Now if the rootstock of Solomon's Seal be cut across, some marks will be observed not unlike the impressions of a seal; hence the plant was of "singular vertue in sealing or healing up wounds, broken bones, and such like." On the same principle the purple marshwort was "an excellent remedy against the purples," and the quaking-grass and the aspen specifics for the ague, while the pretty little herb-Robert of our hedgerows, from the red hue of its fading leaves, was a "wonderful stauncher of blood."

The Lily-of-the-valley (*Convallaria majalis*) is a far rarer plant than Solomon's Seal, but it is often abundant where it occurs, as in some of the woods of Lincolnshire. In the days of Queen Elizabeth it grew, we learn, on "Hampsted heath, foure miles from London in great abundance, and upon Bushie heath, thirteene miles from London, and many other places." In Hampshire it is confined to a few localities, and like the Wild Tulip which still remains with us, is strangely shy of flowering. In a wood known as Lily Wood, not far from Droxford, where Izaak Walton spent a portion of the last years of his long life, the plant, in company with the whortleberry, is abundant, but some years it is scarcely possible to find a single flower. A curious use of this species in the sixteenth century is mentioned by old Gerarde: "The floures put into a glasse, and set in a hill of ants, close stopped for the space of a moneth, and then taken out, therein you shall finde a liquor that appeaseth the paine and griefe of the gout, being outwardly applied, which is commended to be most excellent."

Many of our most beautiful native plants have suffered, nearly to extinction, as already noticed in the case of *Daphne Mezereum*, from being transplanted from their natural haunts into gardens. This has been specially the case with the handsome Fritillary or Snake's-Head (*Fritillaria meleagris*), called by our early botanists "the Checquered Daffodil or Ginney-hen Floure." The petals of this most choice flower are, as an old writer says, "checquered most strangely, surpassing the curiousest painting that Art can set downe. One square is of a greenish yellow colour, the other purple, keeping the same order as well on the backside of the floure as on

the inside, although they are blackish in one square and of a violet colour in an other; insomuch that every leafe seemeth to be the feather of a Ginny hen, whereof it took his name." The plant may still be seen, where it has flourished for centuries, in the Magdalen meadows at Oxford, and in a few other localities; but in many of its old haunts it has now entirely disappeared. The same, however, cannot be said of the curious, almost uncanny, Herb Paris (*Paris quadrifolia*), still growing where Ray found it at Black Notley in Essex, and where Gilbert White found it at Selborne, and not uncommon in many of our Hampshire woods. To this singular plant, at once distinguished by its four large pointed leaves "set one against another in manner of a Burgundian crosse or True-love knot," many virtues were attributed. The great Italian physician of the sixteenth century, Matthiolus, tells us that "some that have laid long in a lingering sickness, and others that by witchcraft were become half foolish, by taking a dram of the seeds or berries hereof in powder every day for twenty days together, were restored to their former health." If the herb possesses these virtues, then, as old Nicholas Culpeper says, it is "fit to be nourished in every good woman's garden."

XI

THE BEE MIND

"Oh wonderful! Hath the All-Wise Creator plac'd such Wisdom, such Curious Art, such Fortitude and Foresight, so Polite a Government . . . in Creatures so small as the Bees!"

—Joseph Warder.

THERE is no familiarizing the honey bee. I never take the quilt off those glistening combs without a slight feeling of awe—it is as if one were opening the door of a chamber of mystery, stealing across the threshold into a place unknown, darkly wonderful. But the mysteries of the bee do not blind us to the plain fact that her intelligence runs in grooves; is of a strictly limited character. Of this there have been fresh illustrations during swarming time.

By the side of the overcrowded hive, out of which the old queen comes, with her great following, is often an empty hive, admirably suited to the new monarchy—or republic—for, despite tradition, it more nearly resembles a republic. Often, before

BEES.

From a photograph by
F. Martin Duncan, F.R.P.S.

the swarm comes forth, this vacant hive has been long and critically examined by many bees, apparently explorers. Yet how seldom is it chosen and occupied without the guidance of the bee master! Instead of going into this hive, ranged and ready for them, the swarm will settle in a cluster on a tree or bush—by the river Lambourne, I found and all but trod on a swarm in a faggot—and will finally establish themselves, if they are not taken charge of, in the roof of a house or the hollow of a tree.

But only introduce them to the bee-hive which—in vain—their explorers have examined, and which they themselves have passed a hundred times a day, and they will joyously run up the alighting board, jostle in at the entrance, and then and there take possession of the very spot that they need for founding their State in.

If their intelligence had anything like affinity to human reasoning power, surely the swarm, on emerging with their queen, would go straight into that empty hive with its hanging row of bar-frames, each supporting a sheet of wax ready to work out into cells. Instead, the bees will waste a precious day or more at the height of the honey flow, examining, re-examining, some crevices about a wall or roof, which are not the least good to them. I have seen it mentioned as a sign of the bee's wisdom that the swarm coming forth will often fly several miles away from their old home—as proof that the bee does not wish to overcrowd a neighbourhood. But, if so, why, when the swarm is shaken down in the cool of the evening on a white sheet outside the empty hive, do the bees promptly crowd up, with all the music of satisfaction, carrying their queen with them, and take possession?

No—the bee intelligence is strictly circumscribed. What we term "reasoning power" does not seem to exist among bees. The arrangement, the order of their State is marvellously beautiful. The spirit of the hive is beyond praise in its devotion, discipline, endurance, fiery patriotism. But here end the virtues of the bee. Compared with those qualities her intellect is beneath contempt. Her machinery of mind cannot move outside the deep worn grooves of habit, which I suppose were slowly made—geologically slow—in the unreckoned thousands (or should it be millions?) of years of her unknown history—for one cannot doubt that this is one of the most ancient civilizations in the world to-day—it may even be the most ancient.

XII

BIRD-WATCHING IN A BREYDON PUNT

> "The birds around me hopped and played;
> Their thoughts I cannot measure:
> But the least motion which they made,
> It seemed a thrill of pleasure."
>
> —WORDSWORTH.

THE dew sparkles on every leaf-bud and grass-blade, and the skylark sings merrily abovehead on a bright May morning. The sun has climbed his rosy way just high enough to tinge with ruddier hues the pantiles of the quaint old houses on the opposite quay-side, and to fling a glare of burning light on the freckled surface of the tide gliding by our boat-house doors. A few big sea slaters (*Ligia oceanica*) are sunning themselves on the woodwork, and a number of banded *Nemoralis* snails are loitering still to nibble at the succulent grasses topping the "wall"; while a parcel of black-headed gulls, rejoicing in their nuptial hood and the glorious morning, are taking a few hours' respite from the cares of nesting, and seeking a change diet from inland grub and earthworm: they dip at every edible morsel that floats on the tide—floating fish or struggling insect, and daintily drop toe-deep into the water as they snatch at some high-swimming *Idotea linearis*, or "sea-louse." How carelessly and merrily they scream!

It is but the matter of a few minutes getting our punt afloat, one foot as we push her scrunching a handful of broken carapaces and legs of hapless shorecrabs that, last night, a couple of brown rats discussed at supper time: they hunt on the mud at low water, sometimes even by daylight, their foot-prints and tail-streaks dotting thickly here and there. Our gun-punt is a typical Norfolk boat, eighteen feet long, pointed at both ends, like a collier's pick-axe, broad amidships, and where the haft fits in is where the punter sits to row—in the "well" of the craft. She is flat-bottomed, drawing only three or four inches of water; she was built for a watcher of birds, and not a butcher. We can glide over the "flats" in shallows that a keeled boat dare not negotiate. Decked fore and aft, with a low rail round the "well," we care little for the wintry waves into which she dips her nose, for the broken water runs off at once from the slightly rounded deck. To-day there is but the merest ripple; we won't ship the mast, for speed is unnecessary, and the

lockers contain creature comforts. I will sit amidships and scull; you be seated on the stern and keep those binoculars handy.

The wind is fair from the south-east, a quarter beloved by every local wild-fowler and ornithologist when the migrants are moving in spring or autumn. You heard the shrill pipings and the mellow whistling above-head last night, which told you birds were on their travels, and had halted awhile to circle around and puzzle out the meaning of so many strange lights beneath them. The curlew "whauped," the grey plover "*kle-a-ed*," and the dunlin blew his keylike note in shrilly monosyllables. We hope to see some of them breakfasting on the flats.

* * *

We are overtaken as we near the great railway bridge which now spans the entrance to Breydon by a picturesque Norfolk wherry, whose deeply-laden hull, built on the selfsame lines as its early predecessors, the Vikings' ships, and huge sail, always befits a Broad-land picture; a careless fellow, hands in pockets, leans against the winch on the forepeak, whistling a popular air, his mate smoking a fragment of clay pipe at the tiller cleverly manipulates sail and rudder. Other wherries ahead dot Breydon, and bending to the steady breeze, keep to the "channel," marked plainly enough by a four-mile row of red painted "stakes" on the left, and a row of black ones on the right. Far away on the sky-line windmills, and here and there a marsh-man's cottage, show above and break the monotony of the "walls," while a half-dozen Breydoner's houseboats give spots of colouring below them. Above all is the blue, speckled here and there with a few swift-moving clouds of Naples yellow.

We pull up at the "Lumps" just inside the five-stake drain, putting to flight half a dozen town pigeons that have been gleaning among the drifted *Zostera* blades that the tide has flung up among the wiry rond-grass and stunted glass-wort. Their quest was *Hydrobia ulvæ*, a split-pea-sized mollusc very like a *Limnæa stagnalis* in shape. The pigeons fill their crops with them: we later on find every floating chip and every blade of *Zostera marina* dotted thickly with the species. A half-score loquacious whimbrel take to wing in an opposite direction: they have been pushing their scimitar-shaped bills into the holes of the mud-worms (*Nereis*) and picking up here and there a shrimp and *gammarus*. How conspicuously the white of their hinder quarters shows up against

the brown mud and between their grey, sharp, curved wings! The noisy "May-bird" of the old race of gunners was always greatly disliked, for it did sentry-go for flocks of friendly waders, and was always the first to warn of danger.

We purpose lying in a little creek for half an hour, by which time the flats, higher up, will be covered, and the birds driven from their feeding grounds must come this way for a foothold, or go to the marshes to nap or preen their feathers, and chat over plans for the morrow's doings. Already a couple of knots, unnoticing us crouching in the punt, and decoyed into halting by an imitation of their note, have alighted on the drift left at last night's high-water mark; and a trio of turnstones, clad in the black and white and ruddy brown of spring, with legs of orange-red, have joined them. Right merrily the turnstones commence to fling aside the wrack and bits of flotsam under which hide *Gammarus marinus* and many a shore-hopper, and which skip or wriggle to the right or left on being so unexpectedly exposed to view. They do not reap the benefit of all their labour, for the friendly knots do not mind sharing in the spoils, while a quartet of dunlins in their vests of black promptly step in and dodge and rob the turnstones with amusing impudence. Twice the turnstones in turn pretend to punish them with open bill, but their menaces are unheeded, and they repeat their pilfering at the earliest moment, and finally tire the patience of their larger friends, who with a low clear note take to wing and leave them.

Walking sedately on the far side of the lumps are several curlews, piping between their probings in that self-complacent trilling note which bespeaks contentment and satisfaction. How adroitly the long bill is thrust down to where the clams are hiding. It is amusing to see how the curlew timidly jumps aside as an equally startled mollusc squirts up its surplus water; but it is to its own undoing, for the bird immediately digs down, and if it is not too big hauls it out, and forthwith devours it. The curlew sometimes muds his "face," for the clam as often lies six inches buried, and the curlew usually has but a five and a half inch bill with which to nab him! The shorecrab provides the curlew with many a breakfast, but he never profits by his failures to swallow any but the tiniest of flounders. Yet he can never refuse to toy with a fish he knows it is impossible for him to bag, and the wily

gulls standing watchfully around know that there will be a chance for one of them when he flings it away in disgust.

Not fifty yards from where we are skulking, less than two years ago I saw nine dainty avocets sitting afloat in this very drain, dancing up and down on the rippled waters just as you see a fleet of ships riding at anchor; and some of them, ducklike dipped, with tails up, pricking their needle bills in the soft ooze for mollusca; and if perchance they discovered a mud-worm it suited them just as well. One of the delights attending a trip among the mudflats is the unremote possibility of falling in with unexpected rarities. I have thus come across an Iceland gull, a stork, a Caspian tern, a pelican asleep with his pouch full of flounders, and many a spoonbill. And only quite recently a friend of mine saw four glossy ibises; he went next day to try and get a shot at them, and fell in with thirteen red-crested whistling ducks instead, and with punt and shoulder gun secured nine!

Let's make now for the "Ship" drain. But stay! turn your glasses on yonder herons near the "walls"; they are fishing for eels and flounders in the North Wall drain. You will observe that they are in the excellent plumage of springtime, their long glossy black crests waving in the wind, like pennants. You will notice, too, that they do not stand still and wait, Micawber-like, for what may turn up, as juvenile herons do; but like grotesque sentries they march along by the edge of the flat and snatch up victims that would evade them. Young birds exhibit more patience, no doubt, but exercise less common-sense.

* * *

Those two rows of short, scraggy, upright timbers are all that is left to view of the old brig *Agnes*. Let us fasten the punt to a couple of them: this is a favourite post of observation of mine. The *Agnes* regularly crawled to the Straits and back in the days of Nelson, carrying wine and fruit; they knew stem from stern by the jutting out bow-sprit. In the seventies the Commissioners brought her and sunk her here at the mouth of a drain: there was far too much scouring taking place under the protecting wall, by all the body of water that dropped off the flats as the ebb tide made. They cut the drain with a more circular sweep into the Channel. In 1878 a pair of swallows nested under her decks, notwithstanding the hold was then always full of water; to-day where the decks

birds of the home-abiding kinds; as the third week of April leads in each crowded day, the rapidity of change seems to outstrip the attentive mind, and the ear has hardly grown accustomed to the happy twitter of the racing swallows, to the call of the cuckoo in the elms, or the chatter of the inconsequent whitethroats in the shooting hedge-sides, when the throb of the nightingale's music first breaks upon the expectant senses in the mid-flood of the spring.

Like the first impression of many things of famous and universal repute, the first strain of nightingale music falling on expectant ears bred beyond the limits of its range will often seem distinctly disappointing and unfavourable. We are apt to form expectations greater than any reality can immediately fulfil, and few persons who first hear the nightingale's song, whether in the midst of the high noonday chorus or alone in the silence and darkness of night, will at once regard its rich but broken music as worthy of such great and age-old praise of the poets, and all its acclamation and tribute of worship from men of every time. Often the nightingale will sing, not in a free, unbroken torrent of music like the lark, or even in such sweet, rich desultory catches as the careless blackbird, but in staccato bursts, with provoking checks between them; some of its notes, too, especially in the case of the least ripe and perfect singers, may seem almost harsh and untuneful when heard near at hand, from the very force and urgency of their delivery. But when the song of the nightingale is heard year after year, by day and by night, among all the innumerable bird-voices of early summer, or lonely in the moonshine or under the stars, there are few who do not feel that it does excel the songs of all our other birds in passion and richness, in an unequalled mingling of liquid sweetness and wonderful force and fire. It is this supreme force, this masterful and heart-deep passion, in the nightingale's song that unquestionably places it above the three or four other kinds of English bird-music which may equal or even surpass it in sustained purity or sweetness of tone. The vehement fulness of its utterance is so unparalleled, and even startling, as it suddenly bursts upon the ear from a brake of green by the footpath among all the voices of May, that there seems an actual physical necessity for it to pause for an instant's breathing-space after each tyrannous burst of song. And yet there are many times, in the softest

nights and days of spring, when the nightingale will forget its broken and halting catches, and pour forth an almost unbroken tide of deep and passionate music. It is an experience never to be forgotten to hear two nightingales thus challenging one another across a still and darkened valley, one near and one far away, singing with all the power and sweetness that is in them till the distant miles of country seem filled with their voices alone. There is one run of the same deep, liquid note, repeated a dozen times or more in succession, which comes so suddenly, and is so different from what has gone before, that an inexperienced ear generally takes it for the song of some different bird in the heart of the same thicket. And rarer than this, so rare, indeed, that unless one is regularly established in the midst of a nightingale country at song-time one may never hear it for years together, is another and deeper note, kept up perfectly sweet and true to an almost incredible length, as long as any man could whistle on a single breath. No other English bird produces anything at all like it ; and the effect of this deep, wonderful call in the midst of a vehement cataract of notes far up the scale above it is simply indescribable.

Though the nightingale is as regular a singer of the middle part of the day, when the sun is highest in heaven, as any blackbird or chaffinch or yellowhammer, its song is never more impressive than when it breaks for the first time upon the long expectant ear out of the silence of the April night. Like all the birds of summer which are less known by sight than by their song, in cold, ungenial weather it may often be present for days in the copses and broken fringes of the woods before it reveals itself by its first pulsing strain. At such times only a watchful and persistent eye will catch a glimpse of the alert, grey, shapely figure uneasily shifting in the underwood, or alighting for a moment in quest of food on the grassy margin of a woodland lane, while the wind clings to the east in a grey, forbidding sky, and all the spring stands still in the hedgerows. After a week or more of such a lingering "blackthorn winter" all may be changed in an hour by a turn of the wind at sundown into the south or west ; and then, though other birds are stilled by darkness, and not even the restless sedge-warbler has yet taken up his nocturnal song of later summer, the heart of the nightingale is responsive to the unsealing breath of spring.

We have arrived at the *Moorhen*, our old Noah's ark, perched high and dry and shored up on Banham's rond. She used to bear her owner in her smarter days into Broadland haunts; her present moorings, like the old ship *Agnes's*, are final. She is now our "observatory." Tie the punt to the little jetty, and step inside. Fold up those blankets, and set the table from this cupboard, while I light a fire and put the kettle on. While the water boils we'll sit in the stern sheets outside. The tide is at its full, and will presently begin to ebb. On the rond to the right are a score and more curlews awaiting its fall. Some redshanks from the marshes impatiently hurry by, and, like Noah's dove, return, to come again shortly when there is standing room assured. A greenshank flits by just after, uttering his loud clear *pleu! pleu! pleu!* We heard him piping a mile away. He settles in a "low" in the rond, and immediately begins to methodically work the shallow puddle.

Away to the right a mile or more, on the "Fleet" near Dan Banham's Mill, a hundred black specks dot the waters. Take this old telescope, and see if you recognize them. They are wigeon. Most of them appear to be asleep; one now and again may be observed tugging at the *Zostera*—the "wigeon grass" of the old gunners—waving beneath it; this bird delights to feed on the succulent stems of this semi-marine species of vegetation, and most adroitly nips off the less palatable blades of darker green, which float downstream on the ebb tide to tell some ancient eel-babber that the "smee" have been dining in goodly numbers "up above," and he sighs (if these passionless men ever do) when he remembers how he, in the old days, "afore protection done for him," used to "cut lanes" through their ranks with his swivel gun. The coffee is ready; and the sandwiches invite discussion.

A flock of large gulls is gathering a hundred yards or more away in front of us. There are at least fifteen adult great black-backed gulls, and twenty of a younger generation, clad in the mottled grey of the second year; two others are blotched, and have already passed their third year. Myriads of shore-crabs prowl about among the *Zostera*, chasing each other in anger when not pursuing shrimps and gobies, and running after each other again in envious mood when one has secured its prey. On these greedy crustaceans the gulls are feeding. With sometimes four thousand gulls on Breydon, it is a wonder to me that any crabs remain at all!

* * *

The tide is falling fast. Back to the flats come the curlews, and the redshanks, and the smaller waders from the marshes, knowing the times of rise and fall as if they worked by tide-table. All the waders seem hungry again. The whimbrel are leaving the rond and joining the curlews. Small gulls, wearied of their fishing in the Channel, make for the bare mud-patches to rest awhile. The herons have gone back with their catches to their nesting quarters at Reedham. We quant across Breydon, following a sinuous drain that forms a sort of tributary to the river-like Duffell's drain, which cuts Breydon diagonally almost exactly into two. The upper portion of Breydon we have not had time to explore to-day. At the entrance of Duffell's drain, where it joins the main Channel, lies moored the watcher's houseboat, to which we make fast for half an hour's gossip, and to compare notes. We need not hurry, for it is an easy half-hour's pull downstream to our boat-shed.

XIII

THE NIGHTINGALE AND ITS HAUNTS

"There is something in it of Divinity more than the ear discovers; it is an hieroglyphical and shadowed lesson of the whole world, and creatures of God; such a melody to the ear, as the whole world, well understood, would afford the understanding."

—Sir Thomas Browne.

IN the April days when the mist of green has already deepened in the larches, but before the canopy of denser foliage has yet unfolded upon hazel and beech and elm, the covers and woodsides of all but the northern and western fringes of England begin to thrill by night and day with the passion of the song of the nightingale.

Day by day, as the throngs of the summer birds come home from the south, the mounting tide of music grows fuller and more intricately varied under the sun and the soft spring winds. The willow-wren joins the chiffchaff in the half-clothed boughs of the copse; the wryneck's shout is heard once more in the leafless limbs of the oak, and the bittersweet babble of the sedge-warbler brings a stir of bustling life to the dry reeds and green-tagged willows of the pool. New voices mingle every morning in the daily increasing chorus of all the song-

birds of the home-abiding kinds; as the third week of April leads in each crowded day, the rapidity of change seems to outstrip the attentive mind, and the ear has hardly grown accustomed to the happy twitter of the racing swallows, to the call of the cuckoo in the elms, or the chatter of the inconsequent whitethroats in the shooting hedge-sides, when the throb of the nightingale's music first breaks upon the expectant senses in the mid-flood of the spring.

Like the first impression of many things of famous and universal repute, the first strain of nightingale music falling on expectant ears bred beyond the limits of its range will often seem distinctly disappointing and unfavourable. We are apt to form expectations greater than any reality can immediately fulfil, and few persons who first hear the nightingale's song, whether in the midst of the high noonday chorus or alone in the silence and darkness of night, will at once regard its rich but broken music as worthy of such great and age-old praise of the poets, and all its acclamation and tribute of worship from men of every time. Often the nightingale will sing, not in a free, unbroken torrent of music like the lark, or even in such sweet, rich desultory catches as the careless blackbird, but in staccato bursts, with provoking checks between them; some of its notes, too, especially in the case of the least ripe and perfect singers, may seem almost harsh and untuneful when heard near at hand, from the very force and urgency of their delivery. But when the song of the nightingale is heard year after year, by day and by night, among all the innumerable bird-voices of early summer, or lonely in the moonshine or under the stars, there are few who do not feel that it does excel the songs of all our other birds in passion and richness, in an unequalled mingling of liquid sweetness and wonderful force and fire. It is this supreme force, this masterful and heart-deep passion, in the nightingale's song that unquestionably places it above the three or four other kinds of English bird-music which may equal or even surpass it in sustained purity or sweetness of tone. The vehement fulness of its utterance is so unparalleled, and even startling, as it suddenly bursts upon the ear from a brake of green by the footpath among all the voices of May, that there seems an actual physical necessity for it to pause for an instant's breathing-space after each tyrannous burst of song. And yet there are many times, in the softest

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Though the nightingale is as regular a singer of the middle part of the day, when the sun is highest in heaven, as any blackbird or chaffinch or yellowhammer, its song is never more impressive than when it breaks for the first time upon the long expectant ear out of the silence of the April night. Like all the birds of summer which are less known by sight than by their song, in cold, ungenial weather it may often be present for days in the copses and broken fringes of the woods before it reveals itself by its first pulsing strain. At such times only a watchful and persistent eye will catch a glimpse of the alert, grey, shapely figure uneasily shifting in the underwood, or alighting for a moment in quest of food on the grassy margin of a woodland lane, while the wind clings to the east in a grey, forbidding sky, and all the spring stands still in the hedgerows. After a week or more of such a lingering "blackthorn winter" all may be changed in an hour by a turn of the wind at sundown into the south or west; and then, though other birds are stilled by darkness, and not even the restless sedge-warbler has yet taken up his nocturnal song of later summer, the heart of the nightingale is responsive to the unsealing breath of spring.

The earth smells sweet with growth, the stars gleam soft and large, the sky is velvety and dark, moths' wings are abroad in the air; and then, out of the silence and solitude of the garden, from some well-known corner made half mysterious as the sudden throne of song, the night is filled with the strong and passionate prelude of the nightingales of yet another spring.

Unlike many of the other birds of summer, which pour into the country by routes which cross the wider spaces of the Channel, the nightingale enters England at the extreme south-east, and seems to distribute itself westward and northward in gradually decreasing numbers. So far, for instance, to the west as the Gloucestershire and Berkshire borderland, among the streams that make the Thames, its voice resounds everywhere in the mid-May copses; but thirty miles still further to westwards, beyond the high Cotswold scarp, it is far scarcer and more fitful in its coming, so that a single singing nightingale will draw half a country town to hear it, in the early summer evenings of a year when it appears. From their landing-place upon the Kentish shore, the birds spread fan-wise, thinning as they go till by the time that they have reached Trent and Severn and the grey-scarred Somersetshire hills, the last pairs have found fair harbourage in the thickets, and they need the road no more. They are birds of a delicate choice in summer climate and surroundings, and shun, perhaps, not only the later and sharper summers of the north, but even in the milder west, some influence, unknown to us, of its profuser annual rainfall. In any case, it seems always strange that there are no nightingales to haunt the combes and vales of the western land, when May brings in its cloudy nights of incense, and the mind recalls how their song is throbbing under the hills, away between the Virgin and the Plough, where the streams flow eastward to the sea.

More than of most other birds, the haunts of the nightingale are exactly those clean, deep, flowery thickets, where the sylvan life of spring unfolds itself most prodigally and keenly in the six weeks from late April to early June, that are the season of the nightingale's song. The nightingale, like most others of the smaller birds, avoids the dark heart of the woods, and clings to the broken borderland of sunlight and shadow; and it shuns also, like most of its kindred in the tribe of summer warblers, the harsh, enamelled

BEECHES.

From a photograph by
H. N. King.

cover of such evergreens as the firs and pines, beloved of the tits and gold-crests, and the stuffed, dense prickle-bushes of an unmixed gorse-cover, the favourite fastness of so many chats and linnets and spray-poised yellowhammers. It is the "green shade" of the poet that the nightingale truly loves—a shade not thick-spread and dark, but shed in hazy gold by the tender verdure of clean undergrowth and bushes of middle height, which so mingle the sunlight and the shadow between them that the place is as full of coolness as of flowers. Often, where the lower brushwood is topped by forest timber standing in airy order, the nightingale will mount for song, both by day and night, into the more open boughs of oak or beech or elm, a little above the thicket; but although it is not hard to steal a view of him, absorbed in the passion of song, with raised throat pulsing at every burst, and feet firmly stayed upon the bough, he is ready at slight alarm to check his call, and drop back swift and silent into the depths of the concealing underworld, where his nest is hidden.

Of all such green and flowery labyrinths with emerging watch-towers of song, the nightingale most loves those deep copses of hazel and blackthorn and alder, interspersed with taller oaks, which are a characteristic form of woodland in the southern counties, and are technically known as "coppice with standards." The copsewood is cut at regular intervals of from half a dozen to a dozen years; and as soon as the new shoots of two or three seasons have begun to overshadow the first great sheets of primroses which spring up on the very heels of the woodcutter, for the rest of the copse's term of growth it is a thronged home of the nightingales. Wind-plucked beneath the bright spring sun, the spotted gold of the thicket seems to mingle in an intensity of gladness with their throbbing song, and the deep drifts of bluebells and starry stitchwort, red campion and yellow dead-nettle and lilac-spotted orchises, are alive and mysterious with the fascination of their nesting life. Built always on or very near the ground among the fresh spring undergrowth, the loose, leaf-packed nest has often a remarkable beauty of situation and surroundings; the bluebells swinging in the soft May wind change the glossy lights on the burnished olive eggs beneath them, and the apple-blossom drifts down beside the sitting bird from the foam-crowned branches of some wild and ancient

tree. Then comes the last high progress of the year, and the stilling of that fierce prophetic song. As the apple-blossom grows scarce and tarnished, and the bluebells lank and dim in the deepening shade of June, one by one the voices of the nightingales fall silent in the thickets; and now, by a strange completeness of change, their only note is the harsh and guttural croak, or constrained, inarticulate chirp, with which they express alarm for their threatened nests or young. By Midsummer Day the song of the nightingale is to be heard no more; and although the joy and triumph of summer seem expressed more fully than ever before in the brief and luminous nights, the myriad roses that star the hedges, and the great sheets of scarlet poppies and crimson clover blossom that burn to the brightness of the sun, the ear already misses that tumultuous music of the mounting year, and we feel, afar but surely, the turn of the receding tide.

XIV

SOME MOORLAND BIRDS

"The fall of Kings,
The rage of nations and the crush of states
Move not the man, who from the world escap'd
In still retreats and flowery solitudes
To Nature's voice attends."

—Thomson.

It is in the merry month of May that the ornithologist, in South Central Wales, will do well to turn his thoughts to his loved haunts and probe the secrets of many a "cwm," "coed" and "nant;" for then most inland birds are busy with domestic cares.

Choose a day then, and starting at daybreak, stray up towards the hazy curtain of the rosy-tinted hills. There are nine solid miles in front of you before reaching a remote mountain village—the Ultima Thule of civilization, but it is a walk which will prove one of unsurpassed enjoyment. Early in your walk, a goldfinch —familiar enough object— twittering as it flies, crosses from one hedgerow tree to another where it sits half buried by the foliage. You pause; for a solitary goldfinch at this season surely speaks of a busy mate. A horse chestnut, shimmering in its pink flush of clustering blossoms, here adorns the wayside, and the cunningly-concealed

nest will be cradled far up on the tapering fringe of a branch swaying across the road. Presently the straining eyes are rewarded with a tiny "something" that is certainly no excrescence of the bark or natural formation of the leaves, and a lightning climb lands you within a few feet of its probable whereabouts, when *two* excited goldfinches, flitting restlessly from bough to bough, now across the road then back again, intimate that the trail is growing hot. That "something," can you only find it, is beyond doubt the nest. . . . Ah! At last you have it and this time a slow, careful climb enables you to peep down at the five, porcelain-shelled, greenish - white, purplish - spotted eggs, reposing snugly in their woolly, down-lined bassinette.

Leave this blissful picture and trudge on with the birds to cheer your path. Now it is a singing tree pipit rising and falling in the liquid air; now a fragile willow wren whispering its "irregularly blended cadence, now swelling, now diminishing;" next a wood warbler shivering in ecstasies over its tremulous refrain; again the rich, mellow notes of blackcap and garden warbler lurking in the thickets bordering the track. . . . Just here the road winds for well-nigh a league through heavily oak-crowned hills and pine-capped knolls—the haunt of the buzzard; and at this very moment a pair of the great hawks are sailing far above the wooded ramparts on the right. Were you to wander up the ravine leading to the heights, you would find the grey, downy brood nestling in their rough home securely placed in the gaping fork of an ivied oak. Not so long ago, that now rarest of British birds—the kite—could have been seen from this very byway "swimming sublime in oft-repeated circles, screaming loud." But now, alas! it has gone.

In these same woods the great spotted woodpecker finds congenial quarters; the unmistakable, single cry of "chac" sounds with startling clearness and then the author of it—a mottled black and white shadow springing up the crinkled, papery bark of a silver-washed birch, rivets the attention. Not far off, in a similar tree, is the circular, chiselled hole, where his mate, in her stuffy retreat, is hatching the half-dozen creamy-white, polished eggs. Don't tamper with it, for with few exceptions to cut out a woodpecker's hole spells its inevitable desertion. The handsome green yaffle is here too, and his unearthly, neighing laugh rings out loudly from the black firs bordering the old mill.

This hoary oakwood also befriends the lovely and rare pied fly catcher, a bird whose next regular summer resort, apart from Wales and its border counties, must be looked for amongst the distant glens of Derbyshire and Yorkshire. Many pairs will be encountered as you scramble along the sun-baked slopes of the "hanger." Stay your steps and watch a pair. The cock, spick and span in piebald livery, is restlessness personified; his alarm note, oddly like the redstart's, betokens a nursery somewhere close by: the rustier-garbed hen's anxious "whit" and ruffled feathers which she shakes from time to time, tell you that she has just left her eggs. Sit down quietly, and almost imperceptibly the birds, with many a feint and deviation, will get nearer and nearer to one particular oak. Holes there are in plenty; the decaying timber abounds with them, but the knot-hole in this special oak interests the birds strangely. The nest must be inside. Ah, you were right, for quick as thought, when she fancied herself free from surveillance, the hen has flown up to the entrance, clung to it momentarily, then dived in; and immediately her mate's unmistakable song swells the choir of sylvan voices. It might be imagined that the home of so dainty a bird would be of the trimmest and fashioned of the choicest materials; far from this, it is a rough untidy structure of dried grass and dead leaves artlessly put together in the sheltering hollow. But the pale-blue, fragile eggs are lovely beyond compare.

Leave the woods to their lonely vigil and toil up the devious, switchback path. The scenery, if now practically bare of timber, is nevertheless just as pleasing. Instead of woods, mountains confront the gaze; on the right are the barren slopes of a desolate mountain, which, save the billowy crests of the stately Beacons, is the loftiest height that Brecknock can boast; on the left, the hogback of another wind-swept hill stretches for miles, till it sinks into the wooded dingles left far behind; ahead, are the moors and rough enclosures encroaching on the purlieus of the last village that, in this no man's land, you will encounter for hours.

Through this haven you enter some of the fairest country that even lovely Cambria can show: first past the old church profiled on a rifle-green tapestry of yews, and the hospitable inn glistening cheerfully in its coat of whitewash, on beyond the little ivy-clad, stone vicarage, where blackbirds, robins

and such like homely songsters, even in this desolate region, find shelter. Then deploy through a reeking, marshy tract hirsute with stunted oaks and alders, a spot beloved of "cock" in winter. As you leave it, but not before examining a lesser redpoll's home firmly wedged—a dainty, down-lined cradle—in the prickly recesses of a straggling hedge, the entire panorama of the valley suddenly bursts into view. Crumbling walls of broken-up rock tower on either side for many a lonely mile. The river, springing from its birthplace on the confines of the Cardigan hills hard by, now glitters in sinuous curves through morasses of bog and meadow, anon spouts and tumbles riotously in veritable cataracts over giant boulders. One spot, where the rocks almost embrace across the stream, is locally known as "Camraur Bleiddiad," meaning the wolves' footsteps, a fact which of itself proclaims that these grey savages once found good harbouring here. Now the only larger wild animals left are badger, fox, otter and polecat, but, of winged outlaws, buzzards still mew far overhead; occasionally my lord peregrine "winnows" down dale; and to this day a pair of ill-omened ravens are regular inhabitants of that grey escarpment on the right, which, a medley of huge slabs tumbled together with a solid instability, as if hurled by a giant arm in some prehistoric game and abandoned, threatens to topple over on to the faintly indicated riverpath below.

Scale the rocks and visit the robber stronghold. By this time the promising brood, lusty in their newly-acquired strength, have deserted their trampled couch of sticks and wool, and sit composedly on various ledges. They little reck your intrusion—perhaps it is their first sight of man—but with their parents it is another matter. Well do they know his hated presence, and angered beyond measure they flap about above the rocks with far quicker flight than usual, croaking furiously. At one moment they are so close that the rustle of their stiff pinions suggests the "frou-frou" of a silk skirt; next minute, settling on neighbouring crags, they puff out their cheek feathers and raise their hackles in an access of fury.

Now half climb, half scramble down to the track and once again follow the back course of the stream. Sandpipers will be your companions, and at several recognized spots where the rocks rise high and dry above the water, pairs of dainty grey wagtails are admired and their respective nests examined. One nest contains nearly-

fledged young which, though elegant little fellows, as yet lack the striking tints of their parents' costume; in another you find nestlings just hatched—hideous objects; but a third holds a full clutch of hot, creamy-brown eggs.

Now the grey wagtail is a fairy creature to be longed for and loved, for with its graceful manners, trim figure and exquisitely blended finery of grey and brightest chrome, it lends an additional charm to many a spot which one would fancy needed no such enhancement; and in the dread grip of winter, when the entrancing birds have sought warmer quarters down country, the turbulent hill-streams, lovely though they are at all times, then appear to have lost a very part of their being. But if the wagtails have departed, the dipper's sprightly form bobbing from the mossy stones of the "nant" is ever present; ice and snow, storm and tempest trouble him little. You have passed many an ancestral dwelling of theirs to-day, but only to find that in every case the first broods have flown, and that none contain second layings. Just now, however, your luck is in the ascendant; a nest is discovered—a huge, brownish, mossy sphere—supported on a ledge of rock, but half dry. In it, on the bed of dried grass and dead leaves the five snowy eggs may be felt, left exposed as the brooding mother, swishing off in your face with startling suddenness, almost causes you to lose your footing and fall headlong into the boiling pool on whose brink you insecurely balance.

If you would woo the kingfisher, you must hark back many a mile to where the river is broader and slower, and where the banks, in place of being wet and rocky, rise brown-soiled and dry. In a few such spots (for the kingfisher is far from being a really common bird in Central Wales), you may catch many a passing glimpse of an azure and topaz streak darting down stream like some resplendent meteor, or of a more defined, gorgeously attired shape, fishing, from its favourite jetty—a pendant willow branch whispering to the stream; and then there is always the pleasing probability of lighting on the burrow, at the end of which, on nothing but a putrid mass of fish-bones, the surprisingly glossy eggs are laid.

Cross the stream by a series of convenient stepping stones and dawdle up the steep slope leading to the moorland. Not long since this slope boasted a fine oak wood, but the greedy axe has been busy and now only a few disconsolate, half-decayed giants, useless

THE GREBE.

From a photograph by
Oliver G. Pike.

for timber, stand soughing in the breeze. . . . At last the flats are gained, and almost simultaneously the "purring" of a dunlin is heard, and soon after five of the birds are on view. What a confiding species the dunlin is; how utterly devoid of fear! First they keep careering rapidly round you, uttering their strange whistling purr, then they settle literally within a yard or two of your feet, finally to trip daintily along over the rough-coated hillocks ere taking wing once again. Just here are a few small pools, how begotten no man can say, but they appear to rise from the peaty soil; round them are patches of waving rushy grass. As you approach, there steals out from one of these just in front of you a chestnut-backed, black-breasted dunlin, leaving exposed her four richly-blotched olive-buff eggs, lying in their meagre nest of dry grass, as pretty a moorland picture as you will find anywhere. . . . In a parenthesis one may mention that no ornithologist has, as far as it is known, hitherto recorded the dunlin as breeding in Breconshire; yet it has done so, though very locally, for years; as is also the case in the adjoining counties of Carmarthen and Radnor. From Cardigan and Merioneth it has already been reported and, Anglesey excepted, it probably nests sparingly in the remainder of Wales.

Up here the crow of the wild, red grouse delights the ear, and black game, growing scarcer year by year, are occasionally met with, especially where the moors join forces with the wooded "cwms"; here it is, too, that the clamorous curlews have their summer home and fashion their rough nest of cotton grass on a drier portion of the moor. You will be lucky if, at first asking so to speak, you chance on the four pale, spotted eggs, for though of great size they give more trouble to find than you might suppose.

But the most elusive of all these moorland fowl is the golden plover; and more, it is scarce on these Breconshire heights. Nevertheless, this ground always harbours one pair at least during summer, and suddenly, as you top an appreciable rise, first a male's wild, plaintive whistle is heard, then the bird itself is seen—a crouching, indistinct, running form. Occasionally he stops and pivots round jerkily to reveal his full, ebon stomacher; next minute, running again, his variegated yellow back, resembling a piece of the tawny waste suddenly imbued with life, faces you.

Ignore this bird: his bent is to fool you and, if he can, induce you by

following him to quit the spot you now occupy. But instead of being led away on a wild goose chase, rather explore this likely patch of ground: and lo! from the side of a hummock barely six paces ahead, there suddenly springs a fluttering, trailing form. A wounded plover? Not a bit of it! Advance, and on the very spot that she left repose in their lowly nest of cotton grass the four lately-hatched, saffron-mottled, downy chicks, almost as rich a prize as the Welsh bird-lover can hope for.* For although, taking Great Britain as a whole, the bird cannot be accounted a great rarity, yet the finding of its nest, as a rule, must ever rank amongst the hardest tasks that the nest-hunter has to contend with.

Ramble on, and presently a line of rocks, which mark the excoriated flanks of a dingle springs up ahead. A clear, piping roundelay, heard with extra delight because in this region song-birds are scarce, bespeaks a ring ouzel in yonder rowan; and hurrying down a sheep path thinly painted on the cliff, his mate dashes out noisily from a tiny fern-clad embrasure, leaving for your special delectation her four bright bluish-green, chestnut spotted eggs. But neither of the owners are happy, and flying about excitedly, they rouse the slumbering echoes of the moorland siesta with their grating chatter. And your luck does not end here, for swinging round a bluff at the bottom end of the track, a diminutive hawk—a veritable blue-backed, male merlin—flashes past on the wings of the wind. This presiding spirit of the moors is unaccountably rare on these hills, and to have seen one just at this spot is a thrice fortunate event. Yet you do know places—and not so far distant either—where the ruddy eggs can be found, lying—objects of temptation even to the most self-restrained ornithologist—amongst the heather on the hillside.

The lengthening shadows laying broad splashes of sombre colour on the purple crests of the distant hills and the crimsoning sun—sinking towards Cardigan Bay, itself as it were almost imaged in the rainbow - tinted clouds, tell you that your glorious day is all but over.

Relinquish the moor then, and wend your way five long rugged miles to a sequestered wayside station. It is still full light, but the May evening is upon you and the soft halloa of a brown owl floats musically down dale, and a heron—a dark line on the fading

* Young golden plovers stay in the nest for at least sixty hours after being hatched.

sky—hailing from the woods miles beyond, passes over on stately, tireless vans to his favourite fishing grounds . . . . The station is at length reached, but not without a run to catch the strangely - punctual train, and half an hour hence finds you on the tramp once again, though now it wants but four miles to your own threshold. Birds, too, are still with you. Much as you deplore the absence of the nightingale, the mellowed tones of the woodlark—a notoriously late singer—amply repay you. Those gently undulating hills on your left, growing blurred and indistinct in the dying light, are a noted resort of theirs, and more than once you have found the provokingly-well-concealed nest under the dead bracken, littering the boulder-decked slopes; many a halcyon hour have you spent in the company of the alluring woodlark. In the one village through which your way lies, scythe-winged swifts, amorous and noisy, are gathered for their customary evening fling, and gentler, mouse-brown sand martins with lowlier flight, skim like shadows just above the translucent ripples of the darkening river. As you near your own hearth, a night-jar "churs" to you incessantly, as he has done for a fortnight past, and next minute you see him—half phantom, half bird in the gloaming—glancing with erratic flight over the swaying tops of the hazels. Then, and not till then, will you fully admit that the day is well-nigh spent.

What, all these things to be seen in one day? Yes, and many more besides. But then have you not been out since four this morning? it is now nine. Have you not broken the back of forty miles clear? Well have you earned your prospective rest. Tiring, did you hear it whispered? Well, possibly for some, but on these charming Breconshire hills at any rate you could keep going for ever.

XV

THE STORY OF SOME PEBBLE HILLS

"The Hills are shadows, and they flow
From form to form, and nothing stands;
They melt like mist, the solid lands,
Like clouds that shape themselves and go."
—TENNYSON.

THE streets of a large town have been projected till they reach within a gunshot of this pebbly hill, up whose steep, shivering sides we have just climbed. We are some 400 feet above sea-level, and, looking northwards over the lower ridge of the London Clay, on which stands the glass palace of Paxton, through the faint haze the blurred outlines of London landmarks may be discerned. Away to the south, the billowy chalk downs rise gradually upwards to their escarpment on the sky-line.

The capping of pebbles rests manifestly on a layer of fine, sharp, grey sand, and the loose stones have rolled downhill nearly to the foot, leading one to think that the whole is one homogeneous mass. Below the sand lie clays, alternately mottled and blood-red, interrupted by beds of gravel and buff sands. Under all is the foundation of solid chalk. Since the crown lies on the unstable sand, the hill creep of pebbles has gone on until the rambler finds the ascent toilsome, and the panting lungs crave for rest. We notice that the southern side of the hill is very steep. What the geologist calls the angle of repose is very high, nearly 30° from the horizontal walk across the flat table top, and the northward slope, along the dip or inclination of the strata, is seen to be much more gentle.

During the ages a slight thickness of peaty material has insinuated itself among the pebbles, affording roothold for gorse, bracken and bramble. Striking deeper down, the Scotch pine with its rugged red bark, and the more delicately-featured fir thrive abundantly. The former tree has half-rounded leaves, grouped in twos; the oblong needles of the fir, flat and blunt, are strung in a double row. Scrubby oaks grudgingly fill up the interspaces between the conifers, and cover the loopholes between their stems.

The dull purple-black pebbles will well repay investigation. Almost every one is of flint, and must, at some time, have been derived from the chalk. A quartz stone, although practically of the same chemical composition, is

a rarity here. The pebbles are quite round, spheroidal even, save for a flattening above and below. A large proportion of the stones are filled with little depressions, lined with white. These hollows are caused by the removal of the soluble variety of silica in the flint, a process accompanied by loss of colouring matter. Using a pocket lens, we see that the surface of each pebble is battered and minutely hackled in all directions by a network of cracks. These are incipient conchoidal fractures, typical of a flint which has been smartly struck. The pebbles, then, have been subjected to unnumbered blows and buffetings. Now and again we see a heap of the flints cemented into a conglomerate or pudding-stone, by the aid of rufous iron oxide and a little carbonate of lime.

In the secondary, or Mesozoic epoch of the earth's story, there was deposited, in a moderately deep, warm, tranquil ocean a "chalk drizzle" of tiny foraminifera; broken tests of sea urchins, molluscs, and sponges, together with the creatures themselves, denizens of the waters. This calcareous sediment, vast in age and thickness, was consolidated, and ultimately uplifted above the sea-level, producing, in the south-east of England, a gently curving dome or hummock of chalk. Myriads of microscopic siliceous particles, held in solution throughout the chalk ocean, aggregated around sponges and other organisms, forming lumps of curiously shaped flint. Contemporaneously with this process, and again after the chalk was raised, there was a general movement of the disseminated silica towards the joints and cracks in the chalk, resulting in the deposition of the long, dark bands of flint which decorate quarries hewn in the Upper and Middle Chalk.

Once lifted above the surface, the chalk was attacked by frost, rain, and streams. The carbonate of lime was eaten away, and carried off invisibly. The insoluble silicate of alumina remained, interspersed with warty knobs of flint. Before the flint was exposed, however, there was laid down, in a Tertiary sea towards the north, those buff-coloured Thanet Sands which underlie our pebble bed. These sands contain scarcely a pebble, hence the great erosion of the chalk had not yet begun. Soon, indeed, the clayey residue of the destroyed chalk, with sands gnawed from older rocks, were washed down into a series of lagoons or a large irregular estuary, fringed by the Thanet Sands. The apparently perdurable flints, hurried downhill by

running water, collided and ground against one another. The bosses and protuberances were worn down. Land slides, the unceasing attrition of fine sand, the clash of nodule against nodule, smoothed and rounded each little mass of stones. Reaching the shore of the estuarine waters, the already bruised and abraded flints were carried by powerful currents to a shoal at some distance from the land. To reach this bank they must cross a shallow channel, where the rounding process was perfected. That is why no angular or intermediate shapes are found among the gravels to-day. Once on the shingle-beach, the swirl of the waters acted on the pebbles until, in its turn, the shoal was again elevated and the rounded flints were left bare. Subsequent denudation carved out the adjacent valleys and left these pebble hills standing as the last remnants of a retreating Tertiary barrier.

XVI

ADVICE TO ADDER SEEKERS

" Step softly, seal up all hate, for there lies sleeping
The gentle adder, as gentle as can be."

IT has occurred to me that a few hints or wrinkles on the subject of adder-seeking might prove serviceable to some readers of this work, seeing that there are very many persons desirous of making the acquaintance of this rare and illusive reptile. They wish to know it (at a safe distance) in a state of nature, in its own home, and have sought and have not found it. Quite frequently—about once or twice each week in summer—I am asked by some one for instructions in the matter.

One of my sweetest-tempered and most benevolent friends, who loves, he imagines, all things both great and small, pays the children of his village sixpence for every dead adder or grass-snake they bring him. He does not distinguish between the two ophidians. It is to be hoped that no such lover of God's creatures, including His " wild worms in woods," will take advantage of these hints. Let him that finds an adder treat it properly, not without reverence, and his finding it will be to his gain in knowledge of that rare and personal kind which cannot be written or imparted in any way. That which we seek is not *vipera berus*, the subject of Fontana's monumental work, the little ropes of clay or dead flesh in the

British Museum, each coiled in its bottle of spirits and labelled "*Vipera berus, Linn.*"

We seek the adder or nadder, that being venerated of old and generator of the sacred adderstone of the Druids, and he dwells not in a jar of alcohol in the still shade and equable temperature of a museum. He is a lover of the sun, and must be sought for after his winter sleep in dry incult places, especially in open forest-lands, stony hill-sides, and furze-grown heaths and commons. After a little training the adder-seeker gets to know a viperish locality by its appearance. It is, however, not necessary to go out at random in search of a suitable hunting-ground, seeing that all places haunted by adders are well known to the people in the neighbourhood, who are only too ready to give the information required. There are no preservers of adders in the land, and so far as I know, there has been but one person in England to preserve that beautiful and innocuous creature, the ringed-snake. Can any one understand such a hobby or taste? Certainly not that friend of animals who pays sixpence for any dead snake. He, the snake-saviour, our unknown little Melampus, paid his village boys sixpence for every one they brought to him alive and uninjured, and to inspire confidence in them he would go with half a dozen large snakes in his coat pockets into the village school, and pulling his pets out would play with and make the children handle them and take note of their beautiful form and motions.

I can understand it, and if space allowed I should be glad to relate some of my boyish adventures with serpents in a far land, and the strange feelings excited in me by that mysterious and beautiful creature that moved not by feet or wings nor by any other organ of locomotion, as an ancient writer has said, but by means of its own fiery spirit.

My snake-lover possessed one of the largest parks in southern England, abounding in oak trees so ancient and of so noble a growth that they are a wonder to all who see them. This vast park was his snake-preserve, and in moist green places, by running waters, he planted thickets for their shelter. But when his time came and he died, the son who succeeded him thought he would get more glory and sport by preserving pheasants, and engaged a little army of men and boys to extirpate the reptiles. There is nothing now to recall the dead man's "fantastic hobby" but a stained glass window—I wish it had been done by

a better artist—placed by his pious widow in the beautiful parish church, where you can see him among angelic figures surrounded by a company of birds and beasts and reptiles of many shapes and colours, and at the margins the familiar words *He prayeth best who loveth best*, etc.

Let us return to our quest. The trouble is when you have arrived at the adder haunt to find the adder. A man may spend years, even a lifetime, without seeing one. Some time ago I talked to an aged shepherd whose flock fed in a wide furze-grown hollow in the South Downs where adders were not uncommon. He told me he had been shepherding forty years in that place and during the entire period had found three adders! If he had said 300 I should not have been surprised. The man on the soil does not often see an adder because for one thing he does not look for it, and still more because of the heavy boots he wears with which he pounds the earth like a dray-horse with its ponderous iron-shod hoofs. Even men who walk lightly and wear light footgear make as a rule an amazing noise in walking over dry heathy places with brittle sticks and dry vegetable matter covering the ground. I have had persons thrust their company on me when going for a stroll on ground abounding in adders and have known at once from their way of walking in an unaccustomed place that the quest would prove an idle one. Their lightest, most cautious tread would alarm and send into hiding every adder a dozen or twenty yards in advance of us.

In spring the adders are most alert and shyest: later in the season some adders, as a rule the females, become sluggish and do not slip quickly away when approached; but in summer the herbage is apt to hide them and they lie more in the shade than in March, April and the early part of May. In spring you must go alone and softly, but you need not fear to whistle and sing, or even to shout, for the adder is deaf and cannot hear you; on the other hand his body is sensitive in an extraordinary degree to earth vibrations, and the ordinary tread of even a very light man will disturb him at a distance of fifteen or twenty yards. That sense of the adder which has no special organ yet may serve better than vision, hearing, smell, and touch together, is of the greatest importance to it, since to a creature that lies and progresses prone on the ground and has a long brittle backbone, the heavy mammalian foot is one of the greatest dangers to its life.

LAVENDER.

From a water-colour by
Tatton Winter, R.B.A.

Not only must the seeker go softly but he must have a quick-seeing, ever-searching eye, and behind the eye a mind intent on the object. The sharpest sight is useless if he falls to thinking of something else, since it is not possible for him to be in two places at once. To empty the mind as in crystal-gazing is a good plan, but if it cannot be emptied, if thought will not rest still, it must be occupied with adders and nothing else. The exercise and discipline is interesting even if we find no adders : it reveals in swift flickering glimpses a vanished experience or state of the primitive mind which, like that of the inferior animals, is a polished mirror, undimmed by speculation, in which the extraneous world is vividly reflected. If the adder-quest goes on for days it is still best to preserve the mood, to think of adders all day, and when asleep to dream of them. The dreams, I have found, are of two sorts —pleasant and unpleasant. In the former we are the happy first finders of the loveliest and most singular serpents ever looked upon ; in the second we unwittingly go up barefooted into a place from which we cannot escape, a vast flat region extending to the horizon, littered with adders. We have lifted a foot and don't know where to set it, for there is not one square foot of ground which is not already occupied by an adder coiled in readiness to strike.

In adder-seeking the main thing is to find your adder without disturbing it, so as to be able to stand near and watch it lying quiescent in the sun. The best plan is to come almost to a stop as soon as the creature has been caught sight of, then to advance so slowly and stealthily as to appear stationary, for the adder although unalarmed is, I believe, always conscious of your presence. In this way you may approach to within two or three yards, or nearer, and remain a long time regarding it.

But what is the seeker to do if, after long searching, he discovers his adder already in retreat and knows that in two or three seconds it will vanish from his sight ? As a rule, the person who sees an adder gliding from him aims a blow at it with his stick *so as not to lose it.* Now to kill your adder *is* to lose it. It is true you will have something to show for it, or something of it which is left in your hands and which if you feel disposed you may put in a glass jar and label " Vipera berus." But this would not be the adder. Must we then never kill an adder ? That is a question I do not undertake to answer, but I can say

that if we are seeking after knowledge or something we call knowledge because that is a convenient word and can be made to cover many things it would be difficult to name, then to kill is no profit, but on the contrary, a distinct loss. Fontana dissected 40,000 adders in his busy day, but if there is anything we want to know about the adder beyond the number of scales on the integument and the number, shape and size of the bones in the dead coil, he and the innumerable ophiologists and herpetologists who came after him are unable to tell us. We can read about the scales and bones in a thousand books. We want to know more about the living thing, even about its common life habits. It has not yet been settled whether or not the female adder swallows its young, not, like the fer-de-lance, to digest them in its stomach, but to save their threatened lives. Nor do we know how the adder finds and succeeds in capturing its minute prey. Many of us have witnessed the pursuit and capture of a frog by a snake, but nobody, it appears, has seen an adder take a vole or field-mouse. I can only suppose that it fascinates the field-vole, and the smooth snake fascinates the spry lizard, just as the ring-snake fascinates or hypnotises the frog. Again, what is the sense in the adder—a creature so dull of sense, or so devoid of senses—which enables it to find its mate and which will bring together an assembly of a dozen or twenty or more male adders ?

Here, then, are but two or three of a score of questions which can only be answered by field naturalists who abstain from killing. But a better reason for not killing may be given than this desire to discover a new fact—the mere satisfying of a mental curiosity. I know good naturalists who have come to hate the very sight of a gun simply because that useful instrument has become associated in their case with the thought and the memory of the degrading or disturbing effect on the mind of killing the creatures we love, whose secrets we wish to find out.

Let us now return to the adder-seeker who has unwittingly disturbed the adder he has found and who sees it about to vanish into the brake. He has been waiting all this time to know what to do in such a case. He must let it vanish and comfort himself with the thought that he has discovered its haunt and may re-find it another day, especially if he is so fortunate as to scare it from its favourite bed on which it is accustomed to lie sunning itself at certain hours each day until the progress of the season will make it too

THE ADDER.

From a photograph by
F. Martin-Duncan, F.R.P.S.

warm or otherwise unsuitable, when the old basking-place will be changed for a new one. But, should he not be satisfied to lose sight of the adder immediately after discovering it, he must be provided with some simple contrivance for its capture.

My plan, which cannot be recommended to timid persons liable in moments of excitement to get flustered and awkward, is to catch the retreating adder quickly by the tail, which is a perfectly safe proceeding if there is no blundering, since the creature when going from you is not in a position to strike.

I confess I am always a little reluctant to offer such an indignity to the adder, as grasping and holding it up, enraged and impotent, by the tail, although such treatment may be to its advantage in the end. We have a naturalist in England who picks up every adder he finds and pinches its tail before releasing it just to teach it caution. The poor creeping thing with a zigzag black band on his back to advertise his dangerous character, has of all creatures the fewest friends among men. My sole object in picking up an adder by the tail is to be able to look at its under-surface, which is often the most beautiful part. As a rule the colour is deep blue, but the colour varies, the darkest specimens being quite black, while the lightest blues have the turquoise and forget-me-not shade. Occasionally we find an adder with the belly plates of the same ground colour, a pale straw yellow, as the upper part of the body, with the dark blue colour in broken spots and dots and lines inscribed on it. These markings in some cases resemble written characters, and it was said of old that they formed the words

> If I could hear as well as see
> No man of life would master me.

Probably these letter-like markings on the creature's belly, like the minute black lines, resembling writing, on the pale bark of the holly-tree, suggested some other more important meaning to the priests of an ancient cult, and gave the adder a peculiarly sacred character.

XVII

GHOST MOTH EVENINGS

> "The desire of the moth for the star,
> Of the night for the morrow;
> The devotion to something afar
> From the sphere of our sorrow."—SHELLEY.

I FIND the difficulty at midsummer is not to avoid repeating one's observations of living things, and of sky, sea, and landscapes; rather, it is so hard to fix the thought and eye on the same things in successive Junes. No risk, indeed, of going over old ground in detail at this season! The subject-matter of Nature is so inexhaustible, the time so tantalizingly little in which to examine and enjoy it, that the tendency is to turn here and there, to press on always to a fresh thing each June, instead of concentrating on what we attended to this time last year. Out of the great treasuries of these wild-rose days, treasuries of song, scent, colour, and life manifested in most exquisite forms, we are always tempted to choose some new thing. But there are certain June episodes that, once noticed, will be looked for season after season with lively interest. One is the dance at dusk of the ghost moth. Last year this was kept up in the tranquil evenings of the second fortnight in June, and it continued well into July.

The dance is now again at its height in the meadows. It has taken place of late on evenings that closely recall those of last June: the same calm, the same scented breath of the evening just before hay harvest—the partridge plaint—the crooning of nightjars—the peepy notes of the latest song thrush at a few minutes after nine o'clock; only a change in planets, Venus burning in the tinted west instead of the taper of Mars in the blue.

The clock of the moths, like that of the birds, must surely have minute, if not second, hands. After watching and waiting for the ghost moths' appearance on two successive evenings, we may on the third evening reckon almost to a minute—if the weather is of the same character—when they will come whirring out of the long, thick meadow grasses. At ten minutes past nine, I found most of the ghost moths oscillating in the meadow. Next night at nine o'clock not a ghost moth was to be seen, though here and there its relative and frequent companion in the meadows, the common swift moth, was whizzing through the grasses. But ten minutes later a male ghost

moth came up; there was an interval of a minute or so, and then, all at once, the corner of the field was full of ghost moths, satin-white male and brown female. I could count nearly a score on a small patch of ground a dozen square yards in extent, and could hear others impatiently whirring deep down in the tangled grasses as they tried to rise on the wing.

One evening the dance had ended at half-past nine. Every moth had dropped into the grass depths and run a little way up a stem, and there it would be hanging till after nine o'clock next evening—unless by any chance the ghost moths dance again in the dusk of the morning—a twenty-four hour rest. My impression is—though I am not sure—that the ghost moths' dance only takes place once in each twenty-four hours, and lasts each time less than an hour.

As they dance over the meadow grasses, there seems little or no rivalry among the male moths; at most, they will now and again brush each other lightly; it is here as if each were far too engrossed in his own movements to trouble about neighbours or rivals. But of late I have noticed a curious variant of the usual ghost moth dance over the grass heads. At the corner of the field is a small lime tree, and round this a dozen males were playing one evening. Instead of swinging from side to side, as one might expect, they here rose up and down, and whisked in and out among the leaves; now a moth would be near the top of the tree, and now he would be down within two yards or so of the ground; this was more like the rise and drop of the winter gnats in column than the meadow swinging of the ghost moth.

But the oddest feature in this tree variation was the attention two male moths would pay each other. Whether it were rivalry, or whether insect sport and game, I could not say. Two moths would pursue each other—apparently now one, now the other, being pursuer—up and down, and even in and out among the outer leaves of the tree. They would lose each other in these chases, but find each other—actually distinguish each other among several ghost moths—and give chase again in a few moments. Constantly they would collide, brush against or tap one another, and at each tap the lovely gloss of the wings, perhaps the fine brown fur of the tippet, too, must have lost a little.

As to the female ghost moths, I did not see them engaging in this dainty play, though several were hovering over the grasses. The female's move-

ments slightly differ from the male's. From what I have seen, I cannot think she is attracted by the liveliest male dancer or the largest—in size the males differ much—or the most satiny, exacting or nice in her choice of a lover; and more, I now have some doubts whether the male seeks and finds his lady by eyesight at all. Another time I hope to touch on this theme, obscure, but deeply interesting. My attention was first drawn to it by a correspondent at Loughborough last summer. If eyesight play no great part in this extraordinary performance, why all the beauty show?

XVIII

ROE AND RED-DEER

> "The antler'd monarch of the waste
> Sprang from his heathery couch in haste.
> Like crested leader, proud and high,
> Toss'd his beam'd frontlet to the sky;
> A moment gazed adown the dale,
> A moment snuff'd the tainted gale.
>
> . . . . .
>
> Far from the tumult fled the roe
> Close in her covert cover'd the doe."—SCOTT.

FROM the deep shade under the spruce firs something was regarding me half curiously, half shyly. More curious perhaps than fearful, since the roe knows a friend from an enemy, and is not given to fear either very much. A buck made some pretty, half leisurely play, as he sought the cover, bounding lightly over tufts of faded bracken, and fallen branches. He vanished like a gleam, she like a shadow.

So, I kept on my way through the wood, disturbing the hen pheasants from their dream of housekeeping, among the fallen leaves. The soft, sensuous beauty of the wood pigeons cooing hung on the still air, like the heavy scent of hyacinths.

Two forms slowly lined themselves out against the red herbage; whether the same pair or not were hard to tell. For the roe doubles, and appears again, as in some woodland game, and so multiplies. An involuntary exclamation freed them from the spell, which for a moment held them. The white patch at the base of the tail—amid the sympathetic toning of all the rest, betrayed their passage.

This dash as of a careless brush, the light as from a low burning lamp, may

serve as a guide through the dim wood paths, in times of danger. Already, perhaps, was the doe in search of a site for her nest, in the secret places of the wood, soft below, and under the hiding of overarching branches. There in the coming May would she drop her dappled, velvet-eared young. Thence she would lead abroad her double charge of large-eyed fawns, their sides sleek and shining, their delicate legs slender as hazel wands. The roe not only pairs, but breeds in pairs ; in both respects, differing from the red deer.

One who has not met it at home, can, vaguely, understand all that the roe is to the wood. When he has gone there, he will not need to be told why legend, and even tragedy have taken its shape. It drifts across the transient sun gleams, and through the shades which lie thick under the pines. Its presence and passage are less seen than felt. Only, after it has vanished, does the reality dawn on the mind.

The lower whorls of the spruces swept down, till the tips brushed the faded needles, carpeting the wood floor. The air was stifling in its windless heat. Progress was slow and painful ; mostly stooping, often doubling up. From my quadrupedal pose, I peered along the aisles ; pillared with tree boles, groined with branches, and shaded in a dimmer than religious light. At a distance of uncertain yards, which might represent a mile of lit, open country, vague forms appeared, and eyes shone like four faint stars.

What a dainty piece of quiet stalking, merely for the charm of it, and with no rifle save the eye. There was a quick shot at the buck springing back to shelter, bearing the faint white light behind ; a right and left at the pair, whose red coats were so faintly outlined against the red herbage, a wavering aim, midway between where the stars were so faintly gleaming in the dim wood aisles. The shyness, the curiosity, the half sportive grave play of the quarry. What delicate sport it would make, if sportsmen ever think of the charm.

In the presence of real danger the buck reveals quite new phases. Not that he fears more, but that he becomes more resourceful. While the charm is not less, the interest grows. He is ready witted. Of all sporting animals this shy creature is least flustered by the chase. He is tantalizingly leisurely in his movements. I think that always the stalk should be a solitary one ; the charm vanishes else. A man should be alone in the wood

with the roe. Say he puts a dog on the track to vex the echoes.

The roe is not afraid. He leads a merry dance through the shades. A glance at the open country and he forms his plans, in which is a trace of humour, or, at least, of elfish mischief. From tuft to tuft of the marsh, he springs, while the hound flounders through the black water, and over the sinking bottom. Round a group of mounds, he will move, at a minuet pace. All this interest, and variety, half amusing, and wholly charming are in the legitimate pursuit of the roe.

This infinite tact is not appreciated. No play is given to the ready wit ; nor space for the elfish touches. The superior knowledge of woodcraft, more perfect than that of otter in streamcraft ; the well-nigh flawless sympathy with the background are made an excuse for methods which deprive him of his advantage. The shades are so near, the passage across the glade so swift, and the vision itself so puzzling. But are not these the conditions under which the creature lives, and therefore the true environment of sport. The chase is wanting in good taste, in chivalry, and therefore in gladness.

In spring, the roe puts off its winter mouse colour. While it wears the summer and autumn red, it is in the worst possible condition. Then it is often shot, along with the red deer. It is pronounced bad venison, as though it were the creature's, and not the shooter's fault. The horns begin to sprout ; they rise over a mere bag of bones. The head is kept as a trophy of a shot which ought not to have been fired. A shot out of season is unsportsmanlike, and is not fired at any other wild creature. The roebuck's head is no adornment for the hall.

September witnesses the transition from summer red to winter mouse colour ; by November the change is complete. In December the horns are shed. The weeks which follow are the season. The roe should be shot only when thus mouse coloured. After Christmas, the venison is as good as venison could be, better than that of the red deer in September. The want of horns is the weakness of winter shooting. A trophy carries the eye beyond the slaughter.

The roe is perhaps our only truly wild deer. If not exactly a migrant, it is at liberty to shift about, as much, and as far as it will. It is found wherever is cover.

If not so graceful, the red deer is the statelier. It has the advantage in height and weight. It stands about

four feet at the shoulder. Its pose, when the head is raised, is nobler than any creature of the wilds. No adornment so picturesque as the horns which it wears. In forest-deer the branching is not so free, though the body is heavier. They are antlered monarchs of the waste. Nor even there does any fixed proportion exist between weight and the numbers of points.

While a stag of 22 stone 6 lb. yielded a head of ten, another of 14 stone 6 lb. bore seventeen points. The famous Glenquoich stag of twenty, weighed but 16 stone 6 lb. It would almost seem as though the horns branched at the expense of the body. A head of twelve is a royal. The head is sought rather than the weight. Unlike the roe, head and body are perfect at the same time. The antlers lend to the sport of their own picturesqueness a touch of charm, a glow of chivalry. Incalculable would be the loss, were the season a hornless one.

In certain of the greater forests, driving is justly regarded as fitted only for the weak and worn out. Says a great Highland chief—"I'd as soon go into a farm yard and shoot at cows." A collie may be used for tracking, but is often dispensed with. Even the gillie is left behind, that the stalker may be thrown on his own resources. When old hands tell of their best day, it is not that on which they grassed the biggest number. But, in an open scene, with a puzzling wind, when by crawling a few yards at a time, in the shadowless intervals, they succeeded, after several hours, in getting within shot.

Such stalking demands a wide horizon. The Scottish forest is not under the shade of trees. It is a wild and diversified scene; heathery moor, bare hillside, and bouldered torrent. No two are quite alike, save in that none of them is a forest in the usual significance of the word. At most, is a strip of wood, here and there, for winter and rough weather. In the barer scenes, the corries into which the ruder hill sides are riven serve for shelter. Wooded patches are set aside for sanctuaries, where is immunity from attack. Old stags graze within easy reach, or make for these on the first alarm.

Cloud and sunshine serve for stalking as for fishing; the time of day, in both cases, morning and evening. Some one has defined shooting as an art, fishing as a science. Like all smart sayings, this is only a half truth, of which the converse is equally true. There is art in fishing, and, certainly, there is science in deer stalking. A

favourable wind depends very much on the lie of the scene. In two contiguous beats of the same forest, the wind of one is north, and the other south. There are sites where two opposite winds visit either nostril of the stag; and back eddies which draw whichever way comes the blow. Many things beside remain to be interpreted, by the sportsman, who has dropped his gillie, and is alone with his wits.

There is a talk of deterioration of Scottish deer. The isolation of herds; the greed for a big return from a small forest; the vanity which searches out the best heads although not necessarily the heavier stags, tend that way. While it is possible, by wiser management, to maintain the physique of the deer, noble horns must always be, more or less, an accident.

The rutting season begins in September. Stags are more concerned to meet one another in conflict than to avoid the gun. All things else being equal, the victor is the better. Thereafter, each group has one picked stag in its midst. Stalking becomes easy. One knows where to look; and has only to fear the vigilance, and restlessness of the hinds. Good sportsmen carry the season as short a distance as possible into the rutting time, just as good anglers lay aside the rod when the fish are found at the redds. The end of September is as far as they care to go; if they trespass, it is only into the first week of October. Some time between late November and Christmas is a second battue for the thinning out of the hinds. In May, the white flecked calves are hidden for a day or two in some cunning place of the forest; after which they wander with their mothers.

The annual record of the red deer is different from that of the roe. Similar things come about in quite an opposite half of the year. In spring the stag changes his winter grey for the russet coat. We have red grouse and red deer, our two main sporting forms. There is a tendency for animals to turn red here which are some other shade elsewhere. The fox also. The colour of British sport may well be red. About the end of April, the stag drops his horns; against the roebuck's November cast. This time of helplessness he spends apart. The new pair are full grown in August; their perfection marks the beginning of the season. The red deer is shot when in the pink of condition. Therefore, is his venison thought to be so much better than that of the roe. The horns lend zest and distinction to the sport.

RED-DEER.

From a photograph by
Henry Irving.

XIX

OUR WILD ORCHIDS

"There is no great use of these in physicke, but they are chiefly regarded for the pleasant and beautiful floures wherewith Nature hath seemed to play and disport her selfe."—GERARDE.

WITH the coming of "the leafy month of June," as Coleridge well called it, Nature has assumed her summer garb. The trees, with a few exceptions, are in full foliage, and the maple and sycamore are in bloom. The horse-chestnut makes a splendid show, laden with ten thousand clusters of waxen flowers, and on the downs the hawthorn, or May-tree, is still clad in its vesture of snowy whiteness. Along the tangled hedgerows the honeysuckle is just coming into flower, and before long the first wild rose will be seen; and never is the country more beautiful than when the dog-rose and honeysuckle are in bloom.

In the woods most of the spring flowers have now disappeared. It is wonderful how quickly and completely the different species succeed one another. Only a short time ago the bluebells were in their glory; they have now followed the primroses, as the primroses followed the snowdrops. But other flowers succeed those of spring. There are masses of bugle and veronica, and red-robin and yellow crosswort in the open spaces in the wood, and in some of our Hampshire copses the wild columbine, with both white and purple flowers, is in bloom. The kingcups are gone; but the pastures are still gay with the meadow-crowfoot, and on the banks of the stream the yellow iris is coming into flower.

June, too, is the month when many of our wild orchids may be found, and perhaps no plants are so full of interest to the student of nature as those of this curious tribe. The order is an extensive one, spread over all parts of the globe, and numbering, according to Hooker, some five thousand species. Many of the tropical kinds are what are called *epiphytes*, growing upon the stems and branches of trees, but without penetrating their tissues, and large numbers of them have of late years been cultivated in our hot-houses. All our British species are terrestrial, and although they cannot compare with many exotic kinds in the form or colouring of their flowers, yet they are many of them very beautiful plants, and they are all intensely interesting from the wonderful contrivances and adaptations exhibited in their organs of fertilization. These various contrivances, the object of which is to secure

the fertilization of the flowers with pollen brought by insects from a distinct plant, have been described, with much fascination, in Darwin's classical work on orchids. It is there shown that almost all our British species are fertilized by insects, those with long nectaries by Lepidoptera, and those with shorter ones by bees and flies; while one species is dependent entirely upon wasps, so that "if wasps were to become extinct, so probably would the *Epipactis latifolia*."

Of the large number of Orchidaceæ scattered throughout the world only forty-three species belong to Great Britain. And of these, two species are found only in Ireland, one only in Scotland, and one in the Channel Islands; others are confined to one or two localities in England; and others again, like the Lizard Orchis, the Red Helleborine, and the Lady's Slipper have now become extremely rare. Darwin considered Kent to be the most favourable county for the Order, and he mentions that within a mile of his house at Down he had found thirteen species. Hampshire can claim twenty-five, possibly twenty-seven; and of these, seventeen may be found in my own parish of Droxford.

There was, not unnaturally, much confusion among our early botanists in the identification and nomenclature of many species of this difficult Order, and it is only in comparatively modern times that some of them have been clearly distinguished. Old Gerarde, "seeing there be many and sundry sorts differing one from another," thought good to divide them, in the most arbitrary manner, into five or six genera. Dr. Robert Turner, in his herbal of 1664, makes no attempt to distinguish the various kinds. Under the description of what appears to be the Early Purple Orchis—what he calls "Satyrion or Orchis"—he adds, "As there are many kinds of this plant, so it hath many names. They grow in pastures, meadows, and moist places, as in Danmore Copse and Danmore Mead at Holshot in Hampshire." It is curious that in the lists of "rare plants growing wild," arranged under the different counties, which the great naturalist John Ray supplied for the edition of Camden's *Britannia* published in 1695, so few of the Orchidaceæ are mentioned. In the county of Kent four species only are noticed, including "the Lizard-flower," which, adds Ray, "it hath not yet been my hap to meet with." In the catalogues for Surrey and Sussex, both counties rich in orchids, no species are mentioned. The catalogue for Essex, Ray's

own county, contains but three species, one of which, the rare Musk Orchis, grew at Black Notley, where he lived, "on the greens of a field belonging to the hall called Wair-field." Later on, in the middle of the eighteenth century, in his list of "the more rare plants" to be found at Selborne, Gilbert White mentions only three species out of the sixteen or seventeen now growing in that historic parish.

The earliest of the orchids to flower are the well-known Early Purple Orchis (*Orchis mascula*), so common in our woods when the bluebells are in blossom, and the Green-winged Meadow Orchis (*O. Morio*), at once distinguished by the sepals which form as it were a hood or helmet and are marked with distinct green veins. These plants are generally distributed, and are sometimes, the latter especially, very abundant, so much so as to make a conspicuous feature in the vegetation; and yet, strange to say, they now appear to have no common English name among our country people. They are usually spoken of as "orchises," and no distinction is made between them. In olden times the names, on the contrary, were so numerous that, says old Nicholas Culpeper, "they would almost fill a sheet of paper, and are too tedious to rehearse;" but they have now passed entirely out of use. It is almost certain that these were the flowers meant by Shakespeare, under the names "Long Purples" and "Dead Men's Fingers," as forming part of Ophelia's nosegay—

> "There with fantastic garlands did she come,
> Of Crow-flowers, Nettles, Daisies, and Long Purples,
> That liberal shepherds give a grosser name,
> But our cold maids do Dead Men's Fingers call them."

Other species of Orchis besides the Early Purple will be found in many of our woods in June. The Twayblade (*Listera ovata*) appears to grow in all parts of England, and is, as Darwin has pointed out, one of the most remarkable species in the whole Order. It is easily recognized by its two large oval leaves and long slender spike of green flowers, "each little floure," says old Gerarde, "resembling a gnat or little gosling newly hatched." More generally its flowers are "likened unto little men," and mistakes have often been made by unscientific persons in recording this plant as the Man-Orchis. In company with the Twayblade and blooming at the same time, the Spotted Orchis (*O. maculata*) is often seen in abundance, and in many parts the beautiful Butterfly Orchis is not uncommon. In some of our beech-woods, especially on the chalk, the stately

White Helleborines (both *Cephelanthera grandiflora* and *C. ensifolia*) are now in flower, and they are a great ornament to the places where they grow. The more slender and delicate-looking species (*C. ensifolia*), with narrow leaves and pure white flowers, is a rare plant in Hampshire, but may be found in one or two interesting localities associated with the names of Izaak Walton and of Gilbert White. The strange - looking Bird's - Nest Orchis (*Neottia nidus-avis*), has also a partiality for beech-woods, and though seldom met with except sparingly, cannot be called a rare plant. Its name, which is older than Gerarde's Herbal, refers to its curiously matted roots, "which resembleth a crow's nest made of sticks: from which riseth up a thicke, soft, grosse stalk of a browne colour, set with small short leaves of the colour of a dry oken leafe that hath lien under the tree all the winter long." This singular species, resembling some of the broom-rapes, is regarded by the old writers as a "degenerat kind of orchis," and is spoken of as "a very rare plant." Ray calls it the "Misshapen orchis," and adds "I never observed many of them together in one place." It is one of the three species noted by White, and is still to be seen at Selborne. The first time I ever found "this bastard and unkindly Satyrion" was in Quarles's pinney, where the true oxlip grows.

But while many of our English orchids love the shade and shelter of the woods, and others, including several rare and highly interesting species, are only to be found—but later on in the season—in wet meadows and spongy bogs, the open chalk downs are the favourite haunt of other species. Many of the choicest kinds, with flowers of the most singular form, are down-loving plants. Such, among others, are the Fly Orchis, "in shape like unto Flies, of a dark greenish colour, even almost blacke," the Bee Orchis "resembling in shape the dead carkasse of a Bee," the Spider Orchis, the Frog Orchis, and the Lizard—plants, as old Gerarde says, "of no great use in physicke, but chiefly regarded for the strange and beautiful floures wherewith Nature hath seemed to play and disport her selfe." Some of them, it is true, are so rare that the ordinary "searcher after simples" has little chance of ever finding a specimen. He would indeed be a fortunate botanist who came across in Suffolk or Kent the Lizard Orchis, or even the Green-man Orchis (*Aceras anthropophora*) "resembling a little man having an

helmet upon his head with his hands cut off."

But in many places the Bee and the Fly may be met with, and also the Frog Orchis. They all three grow in my parish, some years in considerable plenty. On June 17, 1904, I counted, beside an old chalk-pit, without moving from the spot where I was standing, between forty and fifty plants of the Fly Orchis. In some seasons the Bee Orchis is abundant on the downs hard by, and on one particular slope the Frog Orchis may be found. It is very strange how uncertain some species of this Order are in their appearance. The year 1904 was an extraordinary one for orchids; the Bee could be gathered in armfuls, and even the exceedingly scarce Musk Orchis (*Herminium monorchis*) was plentiful in the one restricted locality where it was first recorded as a Hampshire plant at the end of the eighteenth century.

But there is much that is strange and inexplicable in the habits of this singular tribe. In spite of Darwin's investigations, which have clearly established his main theory with regard to cross-fertilization through the agency of insects, many questions remain unanswered. What, for instance, checks the unlimited multiplication of the Orchidaceæ throughout the world? They produce seed in such vast profusion that "the great-grandchildren of a single plant of the Spotted Orchis could," according to Darwin's calculation, "clothe with one uniform green carpet the entire surface of the land throughout the globe." And the number of seeds produced by some other species is even greater. Yet it is notorious, as he points out, that they are sparingly distributed. The Bee Orchis, again, is unique among British species in always fertilizing itself, and every flower therefore produces a capsule, yet in some parts of England it is not so numerous as the Fly, which cannot fertilize itself, and is often imperfectly fertilized by insects. Once again, judging from the structure of the flowers, it can hardly be doubted that the Bee Orchis, like its relatives, was at one period adapted for cross-fertilization. Why, then, has it come to fertilize itself? Will it ever revert to its former state; and if it does not so revert, will it become extinct? These questions, says Darwin, cannot be answered; but he once remarked to a friend that "one of the things that made him wish to live a few thousand years was his desire to see the extinction of the Bee Orchis—an end to which he believed its self-fertilizing habit was leading."

XX

THE RAILWAY EMBANKMENT

"With her a sweet companion came,
One alway smiling—'Peace!' she said."
—William Davies.

LANDSCAPES and gardens we do not want to have all to ourselves; companions may often help us to their full enjoyment. But to watch wild life in the finer line and shade, freedom from intrusion is a great thing. The unsympathetic stranger is embarrassing. Figures and voices of wayfarers, even of toilers in the field or wood—much more of holiday-makers—should belong to the distance, be embraced in a kind of bird's eye view. If, however, the occasional passer-by does not actually encroach on our preserve, is unconscious even of our existence, he may be almost welcome. To a hermit behind a hedge, the footfall of a passer-by can be quite agreeable: it may add something to the triumph of solitude to feel that we are in such complete seclusion that even a wayfarer a few yards off goes by without suspecting our presence.

It is this seclusion that often makes the lower part of the railway embankment, screened by a splendid hawthorn hedge, such an excellent spot in summer. There are stiles and footpaths close to, perhaps alongside, these hedges, but the railway ground remains absolutely private. The trains above take nothing from the privacy of the place: lying on the slope or walking among the June grass and ox-eye daisies by the hedgeside, one sees hardly anything of them. Their noise does not distress us; the grand thunder and the shake of trains at these close quarters is good rather than otherwise. I doubt whether it jars even on sensitive nerves. Besides, we can grow accustomed to this sound so soon that, after a short experience, train after train may roar by without our noticing them. It may be the same with wild animals. The pipit or yellow-hammer perched on the telegraph wire does not stir for the fastest, loudest express. I have seen the beautiful little merlin equally unconcerned. Is he conscious, indeed, of its passing?

I have heard that nightingales haunting wooded places by railway lines will sing persistently all night, and I seem to have noticed how long and choicely the railway nightingales sing in Kent. A

friend says he thinks it is because they cannot sleep through the noise of the goods trains crashing and thundering all night. Noise is a stimulant to song with birds, and I have suggested that it may be the river which makes the sedge warbler so songful by night and day. But it is just worth considering as a theory, not more.

The railway embankment is as favoured by butterflies and day-flying moths this June as I found it last year. The lovely little heath moth has been out in numbers since the beginning of the month. It has none of the brave apparel of the wood tiger and the cinnabar moths which also fly by day along the slope, being a greyish little thing, flaccid almost as the snow-white plume moth, but far warier than he. The pattern on the upper wings of the heath, yellowish with wavy brown stripes, is neat as neat can be : to describe it truly you want language fine and pointed as an etching pen, a tongue of diminutives.

The flight of the heath moth is not so weak as one might expect from such limp-looking wings and body, but it is highly erratic, like that of many moths and butterflies with thin bodies and wings that seem as if they had no muscles to work them. Like the "carpet" moths and notably the orange tip and the white butterflies, the heath moth zig-zags along. The movements, on the wing, of an orange-tip butterfly and a small bird—say a chaffinch—or a larger one—say a green woodpecker—are so entirely unlike that one may wonder whether the same principles are here at work. The bird seems to bound through the air in a clean curve, the butterfly apparently can only go forward by quick little flutterings to right and left : to make progress the orange-tip or cabbage white must ceaselessly bob from side to side. With the butterfly we see nothing of the springs, the rise and fall of the body in the air, the clean, distinct closing of the wings between the leaps.

The heath moth and the orange-tip butterfly get along somehow, can fly against a little breeze, as with it, but there really seems—and here, of course, is deception—to be no more machinery about their flight than about that of a flimsy scrap of paper upheld and buffeted about by gusts of wind. This is not so with all moths and butterflies, nor with beetles on the wing, many flying clean and straight.

Another curious style of flight is to be seen on the railway slope. Mother Shipton's likeness is out, and when

she flies her wings appear half open, half closed. It is the same exactly with several of the skipper butterflies, and with the much larger grayling butterfly.

But to my eyes the butterfly gem of the railway slope in early June is the tiniest of them all. This is the Bedford blue, which is to butterflies what the golden crowned wren is to birds. Last year I saw him out in May; this year, early in June. Though so minute, he is a butterfly every line of him—you must measure him by lines not inches—far more so than the skippers, which only pass muster as butterflies because they have, for hall-mark, the club at the tip of the antennæ or horn, which no moth can show. The Bedford blue is not brightly coloured like several of his larger relatives—has just a little dust of blue on a brownish ground, and his wings on the underside are ash grey with a thought of blue about them. But they are cut to a dainty shape, and fringed with white or grey—I cannot make up my mind which, watching him sunning himself on a grass blade.

Nimble on the wing, alert, so spruce in his whole turnout, this blue is a fascinating little thing to see. I have not yet found him on his bed, but I suspect he sleeps, like the common blue, head downward and upper wings laid back so that only the tips show above the under wings. Probably he assimilates with environment then more closely than the common blue, Alexis, or is less noticeable not only through his smaller figure, but through the spots—held in tiny rings—on the under-side being less striking than those of his big cousin.

XXI

THE PEREGRINE

> "Wide around
> With distant awe, in airy rings they rove."
> —THOMSON.

THE peregrine falcon is one of those birds which, owing to the sequestration of its haunts, and because it does not advertise itself in the same way as many of its congeners, has wrongly acquired the reputation of surpassing rarity in Great Britain. Such, however, is hardly the case, for whilst admittedly the bird is not common in the general acceptance of the term, an examination will show that it breeds in practically every county which can boast littoral cliffs of any altitude, including the dazzling precipices of Kent and Sussex; and also in the various groups of islands, as well as in some of their outlying islets. It is also a *habitué* of a good many inland rocky resorts, notably in several of the Welsh Counties, Yorkshire, the Lake District, and, more plentifully, in the deer-forests of Scotland; whilst in the Green Isle it is, for a bird of its class, quite abundant.

The peregrine is out and away the grandest bird we possess. For who can but admire its strikingly symmetrical form and superbly cut outline, as perched disdainfully—often on one leg—on a commanding pinnacle or ledge far up some mighty ocean cliff, it surveys its surroundings with the keenest of keen brown eyes ? Nothing escapes its penetrating gaze ; it looks—as it rightly is—a very king of the feathered creation. Or again, watch its impetuous, death-dealing stoop, as with closed pinions it literally hurls itself—a living steel-tinted wedge—at its panic-stricken victim, when both destroyer and destroyed reel crashing towards the ground, the former rising obliquely to avoid probable death, certain disablement, the latter—an inert, bloody, crumpled mass of feathers—to rise no more. Sometimes, however, the slayer binds to its quarry in mid air. But the peregrine is not so infallible in its " shikar " as people imagine, and I have repeatedly seen hunted birds deliberately thwart it, either by flying over the sea or a lough, or by hugging the ground, in which case the falcon dare not let itself go for fear of being unable to swoop up quickly enough to avoid impact with the land or water.

Princely murderer though the peregrine is, it sometimes turns wanton as well. I have seen first one, then another, of a troop of cackling daws drop lifeless to its relentless, needle-sharp talons, whilst the tyrant vanished over the crest of a distant hill without so much as glancing at its brutal handiwork.

Aptly, indeed, have the Welsh christened the peregrine "hebog" (hunting hawk), since scarce a winged creature comes amiss to it in the way of food; few are the birds that can foil its terrific onslaught. On the moors and deer-forests its diet mainly consists of grouse, black game, ducks, plovers and waders; on ocean cliffs, immense quantities of rock and stock doves and most of the sea fowl (the larger gulls usually enjoying immunity), puffins in particular afford it many a dainty repast. And many a tame pigeon from the neighbouring dove-cots has lost the number of its mess at the talons of the peregrine falcon. In fact, on the Kent and Sussex cliffs amongst others, these, together with daws, partridges (for many a red-handed foray is made far inland), and any other bird luckless enough to cross the bandit's way, constitute its chief fare. But smaller deer are by no means despised: in and around different eyries I have found the relics of coots, moorhens, starlings, finches, and buntings, not to mention beetles; whilst even the kestrel, crow, and chough do not escape its unwelcome attentions. And occasionally a leveret plucked from the fallow, or a rabbit gambolling on the cliff, swell the throng of slain; whilst *rarely* a peregrine, imbued one might suppose with a spirit adverse to the customary habit of making a quarry on the wing, turns poultry snatcher.

Curiously enough until the actual, death-dealing stoop takes place, its neighbours appear totally unconcerned at its presence; indeed, gulls and other species sit placidly on the crags within a few feet of the dread destroyer; at times even, as the falcon sails round far above its eyrie, they make as if to mob it. And though great is the uproar when the attack commences, yet, once the victim is sacrificed, peace is almost immediately restored as if no such horror as a peregrine existed. But the quarry is not invariably killed outright. I have one sad scene vividly painted on my memory, where an unfortunate jackdaw just caught and half-feathered, encumbered the falcon as she flew seawards. She dropped it, and fluttering strenuously the poor fellow, half-

nude and rudely lacerated, made the shore only to be swept away by the incoming tide.

The flight of the peregrine is very characteristic and one quite its own. It is an impetuous winnow, varied by straight, clean glides on motionless vans. And when dashing along a cliff face, the bird will dive curiously from time to time, but the recovery is effected quick as thought and by no means impedes the journey. This rapid winnow then is the normal flight, but at the eyrie and when hunting, wonderful aerial evolutions are indulged in. Now a pair soar grandly head to wind on extended and rigid wing; now they describe wide, sweeping circles, some of the turns being rendered in amazingly majestic fashion. Or again witness a pair on their aerial honeymoon. A stiff gale is raging this sunny April morn and a pair of peregrines—one behind the other—bent on pleasuring, wing their way—it seems laboriously even to these mighty creatures—full in its teeth for some distance. Suddenly a turn is made and down wind they sail like meteors. Half a mile, a mile, is covered in seconds, and then up wind once again only to repeat the performance. At other times the falcon, with a fine ringing flight, is careering round in vast circles: the tiercel shoots out from the cliff below, mounts above her and joins in the giddy race. Amorously inclined he keeps stooping at her playfully, and, to avoid him, she, just as he is on her, turns a complete somersault from side to side. All this is accomplished at top speed, and is an exhibition worth going miles to see. Anon they will toy with and caress one another with their bills in mid-air or tumble sportively in a fashion which recalls the raven's frolics. . . . It is worth remarking that the peregrine—on flight—carries its legs straight out under the tail. Occasionally one is dropped loosely, almost as if broken.

Except during the breeding season, the peregrine is generally solitary, and even during that period the non-sitting bird is often long absent. But a sure find for them both in the vicinity of the eyrie is towards sunset, when, before retiring to roost, they usually indulge in a meal. They seem generally to hunt alone, and the quarry is frequently devoured where it is made.

Now examine the haunts of the peregrine and you will find that they embrace the wildest and bleakest if most romantic of scenery; from the frowning grandeur of the Highland glen, Welsh cwm or Irish cove to the majestic contours of the cliffs and

headlands which lend so much additional charm to many of our sea boards. The peregrine, except in winter when many migrate briefly to wooded realms, loves bare, treeless country—the misty, heathery moorland and barren, undulating downs, where Nature's workings and occasional voices have matters all their own way, and where, save for vagrant shepherd, gillie or ornithologist, the soil is well-nigh unsullied. But on the south coast the hunting hawk often chooses its eyrie on a headland close to a coastguard station, a peculiarity which I ascribe to the fact that these stations are situate in "gaps" which attract the hordes of arriving and departing migrants, loving, as they do, to follow the course of a valley. From these migrants, the murderous peregrines, having chosen their look-out with no little cunning, reap many an ill-gotten meal.

With one or two solitary exceptions —as for instance, the eyrie on Salisbury Cathedral—the home of the peregrine, in our islands at all events, must be sought on a cliff, and generally in the least accessible part of it, frequently where it overhangs considerably. One of three positions—usually in the upper half, because of the commanding position—is chosen: (1) a broad ledge or buttress (bare soil or plant grown), (2) a big hole or wide slit, and (3) a basin formed by the main cliff and a sheltering pinnacle.

Nest there is none. A shallow scratching from 9–12 inches across scraped out in the soil and (if the soil is not too dusty) plainly showing the imprint of the bird's talons, is the sole receptacle for the thick-shelled eggs. Some of the victims' bones and feathers and a few of the falcon's own feathers are often found in the eyrie, which sometimes smells atrociously, but little or no down (rubbed off the falcons accidentally) is present, which is with most of the raptors of usual occurrence. Occasionally, a disused raven's or buzzard's nest is requisitioned; I have seen one eyrie on the nearly level summit of an ocean rock, and several only a few feet down a cliff, one, of special curiosity, within a yard or two of the gap down which the village refuse is shot.

When on a ledge, the eggs are laid in the middle of its broadest part; when in a hole, generally rather less than half-way in. And as most of the holes in use seldom penetrate the cliff more than four or five feet, they can be examined with facility.

The eggs vary from one to four in number. Three is perhaps most frequent, but on the southern cliffs four constitutes the usual clutch. Save

by the merest chance, they *never* touch in the eyrie, each egg being from half an inch to two inches from its fellow, the clutch being laid in the form of a rough square or triangle. They are very beautiful and include every variety of the kestrel's eggs.

One type is creamy-red in ground suffused with rich orange-brown and purplish-red. Another is yellowish-brown or leather colour with darker mottlings, whilst a third is uniform brick or orange-red. A fourth is creamy-white, sparingly flecked with rust colour or splashed and blotched with red; and a fifth brownish-red mottled with a darker shade and finely sprinkled with numerous little spots almost black in their intensity. And on some specimens patches of a white chalky appearance are noticeable. Eggs identical in size and coloration in the same clutch are rare, but the same female produces a similar type year after year. They are deposited at intervals of two and sometimes three or even four days and both sexes (though the female performs the lion's share) participate in incubation, which for one egg lasts a month; for *sometimes* the first egg is sat upon as soon as laid. The young falcons are white, fluffy fellows in the down, and remain in and around their birthplace for eight long weeks. Single-brooded, if the first clutch of eggs is taken, a second will generally be produced after an interval of three or four weeks, but usually in another site; and one pair of falcons with which I am conversant have, for two years in succession, brought off a brood after the *two previous* attempts had been destroyed.

On the south coast a full clutch may safely be looked for on April 7; exceptionally I have seen them at the end of March, but in Wales, the North and in Ireland ten or twelve days later is the rule. Individual hens drop their first egg on the same date year by year, no matter how inclement the weather.

Hole breeders are generally closer sitters than those on ledges, and, indeed, sometimes the former may hardly be induced to quit at all by shouting or clapping: I have even known showers of stones dropped past a hole for some time before the falcon inside could be induced to leave her treasures. Such cases are exceptional and generally occur when the other bird is away foraging.

When flushed from the eyrie, individual pairs behave very differently. Frequently the tiercel is on a ledge hard by the brooding falcon and on danger threatening he shoots out of the cliff, often screaming noisily. This disturbs

the falcon, who soon joins him, taking up the cry in a somewhat different key, and though both are sufficiently bold they seldom venture within gunshot. The peregrine's scream is unmistakable—a wild, piercing, angry cry, resembling, to my ear, a cross between the quack of a duck (hence, perhaps, the local name " duck hawk ") and the clucking of a harsh-throated hen and sounding like the syllable " kwark " ofttimes and quickly reiterated. The tiercel's is rather different and suggests the word " krark." The peregrine has besides three other cries : one which often preludes the above scream—a long-drawn whining " kee-ark," the second a short, sharp " kek," and the third, chiefly confined to the autumn and winter, a low, iterated, chittering or squeaking sound, something like that of young falcons whilst still in the eyrie and resembling to a certain extent one cry of the kestrels :—thus " hek herrek—kerrech." All these cries are usually uttered on the wing. But out of the breeding season this species is practically mute, though I have repeatedly heard the " kwark " call long ere an egg was laid. The earliest personal record I possess is February 26 ; the latest October 26.

But to return to the peregrine's behaviour at the eyrie. . . . In other cases the non-sitting bird is absent, and then the incubating one must be aroused from her duties either by shouting, firing a revolver, or clapping vigorously. A variety of courses may then be adopted. I have known a sitting peregrine dash straight out to sea not to return at all whilst I stormed her citadel. Or again, the bird will hang head to wind and never utter a sound, whilst frequently the absentee will not put in an appearance at all. But most peregrines are habitually noisy and dash up and down along the cliff with strikingly rapid flight, ever and anon making wide detours out over the sea or, in the case of an inland resort, round the valley.

And besides human beings, the peregrine resents the propinquity of several birds worthy of its steel. The raven in particular it detests and the eagle is another honoured foe. But one and all bow to its superior prowess. On one occasion I witnessed a fight in grim earnest—where both birds grappled—between the falcon of an eyrie hard by and a marauding tiercel. The attack was delivered high in air and both combatants fell a hundred feet or more, the falcon's talons locked in the tiercel's breast. From below it is a glorious sight to watch a peregrine leave her eyrie. She launches or flings

herself out with an upward trend of the body and then gives a few lightning-like wing beats before getting into her swing. When disturbed from above, however, she often flutters off with a downward inclination, looking momentarily, for a bird of such imposing appearance and noted grace of movement, quite awkward and deranged.

The return to the eyrie (and if the intruder is not too close the bird will not be long before revisiting it) is accomplished in a truly splendid manner. Instead of flying straight up to it, the noble bird mounts high in the heavens and after a few preliminary circles, but passing down to and close past the eyrie on each occasion, she climbs aloft once more. And now, as if on an inclined plane, she literally dives into her retreat with fast-closed wings, like a blue thunderbolt cleaving the void. But just before the haven is reached, flap go the wings, and out are stretched the powerful yellow legs, whilst she appears to alight with her compact body thrown right back, though it never gives one the impression of any balance being lost. And often before resettling on her eggs, she stands watching over them for an appreciable time.

Several recognized feeding ledges are situated round the eyrie as well as further along the cliff; the eyrie itself, if on a big enough ledge, often constitutes one. Constant for life, the birds sometimes use the same eyrie for two or more consecutive years, but usually speaking they possess from two to five alternative sites which are patronized in turn. These may be close together or, to go to the other extreme, a mile or more apart. Two tenanted eyries are seldom found at all, near each other, the usual interval, even in districts where the bird is abundant, being two or three miles.

An unknown eyrie—even failing a sight of the birds themselves—may be discovered by observing the feathers and other remains of the victims all along the edge of the cliff. These sorry mementoes extend on and off for fully half a mile, but are thickest in the vicinity of the eyrie. . . . Contrary to what most books would have one credit, the peregrine frequents its breeding haunt more or less the seasons through, and those falcons which one meets with during winter in localities where they never breed are generally visitors from the Continent, or immature birds, and *not* our resident, adult peregrines.

As a rule no warier bird exists than the hunting hawk, but on one occasion —a red-letter day—knowing a recog-

nized perching place only four feet down a cliff, I leant cautiously over and for ten engrossing minutes watched a magnificent female peregrine before she looked up ; and at another time—only the ledge was a little further off—I dropped several small pieces of chalk on to a tiercel's[1] broad back before he perceived the gravity (to him) of the situation.

XXII

SUMMER VISITORS

"Come, come is the swallow,
Bringing hours of fair weather,
Fair seasons to follow.
He is white on his belly,
But his back, it is black."
—*Translated from the Greek by* R. C. Trevelyan.

SOME authorities dignify a bird with the name of "British" on the single summary ground that a specimen has been authenticated—a synonym for "shot"—in the island. On this classification we can boast about 400 species. On the more exacting qualification that a bird must have attempted to rear a family here in a state of nature, we can claim about 200 species ; and on the only convincing classification, that which requires an annual visit, our avi-fauna is still further reduced to about 180, of which 36 are summer visitors, arriving here in the spring to breed, and departing before summer is well over to winter in some sunnier clime, Africa, India, China, and parts of Asia Minor being the favoured resorts. Although this annual migration is one of the puzzles of natural history, especially as regards the evident system with which it is yearly carried out, a few of its main principles are now well understood, and it remains only for some causative genius to discover the meaning of the instinct which underlies it. The following deductions from observation show that in its working it is far more inexorable than the law of fashion which governs the annual exodus from London.

It is totally independent of both wind and weather in the country to which it is migrating. We have no sufficient observations to lay down laws as to the weather factor in the countries

[1] Tiercel is a term used for the male peregrine ; the female, to distinguish her, is called the falcon.—J. W. B.

from which the summer visitors come; but if we take the analogy of the common winter visitants, it is probable that the weather in the place of winter residence is one of the main factors. Algiers and other winter haunts of our summer nesting birds do not become suddenly inclement in spring, but probably the approach of increased heat is just as unwelcome to these birds as the approach of extreme cold is to those species which nest in Scandinavia, and flee before their severe winter to Great Britain and the coasts of the Mediterranean. An organization of naturalists has endeavoured during the past ten years to prove that a late spring delayed the great army of migrants in any one species, but found, both by its own observations and by bribing or persuading lighthouse keepers to send the wings of any birds that flew against the lantern glasses and were killed, that the earliest arrivals in each species were found on the coast on practically identical dates in each year; that the main body of the migrants in any given species arrived about the same time in each year independent of wind or weather conditions; that in the case of species which immigrated in great flocks or droves at intervals of several days, these flocks preserved those intervals unaffected by climatic conditions; within a day or two days, a gradually rising temperature appeared to have some influence on the dates of arrival, but only such as could be accounted for by the enhanced ease of the long journey; and that as regards the wind, at any rate, no connexion could be found, since whether it was dead against the travellers or fair and square astern, not a tittle of difference in time could be proved. For instance, in five consecutive years, the first ring ousel was notified on March 20, under widely varying weather conditions; or to take a much smaller and weaker bird, the chiffchaff annually arrives as nearly as possible on March 17, again irrespective of wind or weather; and so on. Further, the swift, which is probably the strongest-winged bird of all that nest in Great Britain, sturdily arrives last of all and leaves earliest, with an entire disregard of weather conditions such as only a Scotch shepherd could hope to emulate.

Again, different species have their well defined and preserved points of entry to the country. Five species, the ousel, garden warbler, sandpiper, swift and corncrake have a marked objection to landing east of Southampton. The obvious retort would be that they all winter in a western con-

tinent, near to each other, from which the Cornish coast affords the shortest sea passage. But alas, this is not so, for if Africa is where many of them winter, they also cover India, and Turkey in Asia, while many other species which winter solely, so far as we know, in these same localities, are accustomed to land further east along our south coast, and even prefer to land further east.

Again, several other species usually land, or land in greater numbers, west of Southampton, but are not altogether averse to entering England at Brighton, or even on the Essex coast. Amongst these indecisive travellers, the swallow and chiff-chaff are the more common, and their winter homes are India or Ethiopia, and the shores of the Mediterranean, respectively. A further feature of interest is that many species arrive in droves, or so at least it would appear. In most species the time during which specimens are observed arriving from over seas by coast observers, usually covers a period of six weeks or two months, say from March 20, until the first week, or occasionally the first fortnight, in May. (There are well marked exceptions, e.g. all the redstarts seem to arrive during the three latter weeks of April.) These arrivals do not commence with a few isolated heralds, swell out to a constant daily total, and fall away again to a dozen or so of exhausted stragglers; but a coast observer notices three, four, five, or six distinct armies arriving, connected with each other by a stream of lonely stragglers before or behind. The natural inference is that the birds wintering in each Eastern continent assemble together and take flight from its shores together. But this idea so far lacks proof. Observation has failed to mark down any single army of this character preparing to take wing from any of the known winter-quarters, admitting that our knowledge of the ways of birds in these wintering countries from China to Turkey is small and incomplete. Dissection has proved equally futile, though enthusiasts have been found to open the stomachs of birds appearing in each flight, in the hopes of identifying insect or other food from the coast of one or other of the known winter resorts. As a rule no food at all is found, the bird being in a very weak and starved condition; or else the food is so far digested as to be unrecognizable; or else it is from some neighbouring country, where the bird may have rested before crossing the last neck of sea (it must be remembered we are very ignorant of the rate at which small birds travel when migrating, and also of

WILLOW WREN.

From a photograph by
F. Martin-Duncan, F.R.P.S.

the course they pursue, whether direct, or embracing any more or less convenient resting places).

Ranged as a table, our knowledge is little, since a page may contain the whole of it.

Bird.	Arrives.	Lands.	From	Mode of Travelling.
Ring Ousel . .	March 19 to May . .	All S. coast .	N. & C. Africa	In flights.
Wheatear . . .	March 14 to May 20. .	Eastern coast	Africa, India.	In flights.
Chiff Chaff . . .	March 16 to May 10 .	Whole coast.	Mediterranean	In flights.
Yellow Wagtail .	March 20 to May 1 . .	Sussex . .	Africa . .	Singly.
Sand Martin . .	March 20 to May 1 . .	W. of coast .	India, Africa	Flocks.
Swallow . . .	March 20 to May 7 . .	Whole coast.	India, Africa	Flocks.
House Martin . .	April 1 to May 16 . .	W. of coast .	Abyssinia .	Flocks.
Redstart . . .	April 10 to 30 . . .	W. of coast .	N. Africa .	Flocks.
Grasshopper Warb.	April 7 to May 7 . .	W. of coast .	S. Europe .	Not traced.
Whinchat . . .	April 1 to May 16 . .	W. of coast .	N. Africa .	In flocks.
Blackcap . . .	April 1 to May 16 . .	Hampshire .	S. Europe .	Singly.
Nightingale . .	April 10 to May 5 . .	W. of coast .	Africa . .	Males first in flocks.
Wryneck . . .	March 20 to April 10 .	E. of coast .	China & Africa	Singly.
Cuckoo . . .	April 1 to May 7 (most last two weeks of April)	E. of coast .	Africa & India	In flocks.
Tree Pipit . . .	April 1 to May 10 . .	Hampshire .	Africa & India	Singly.
Sandpiper . . .	April 1 to May 15 . .	Whole coast	Africa . .	Singly.
Lesser Whitethroat	April 15 to May 15 . .	Surrey . .	Africa . .	Singly.
Whitethroat . .	April 8 to May 20 . .	E. of coast .	S. Africa .	In flocks.
Willow Wren . .	March 28 to April 12 .	Whole coast .	Africa . .	One big flight.
Corn Crake . .	April 15 to May 15 . .	Hants, Dorset	S. Mediterranean .	Flocks.
Shrike	May 3 to May 31 . .	E. of coast .	Africa . .	Singly.
Sedge Warbler .	April 4 to 30	Whole coast.	N. Africa .	Flocks.
Garden Warbler ..	April 16 to May 16 . .	Not known .	Africa . .	Unknown.
Reed Warbler . .	April 15 to May 30 . .	Not known .	Africa . .	Unknown.
Wood Warbler. .	April 12 to May 7 . .	Not known .	Africa . .	Probably in flocks.
Turtle Dove . .	April 16 to May 30 . .	E. of coast .	N. Africa .	Singly.
Swift	April 12 to May 16 . .	W. of coast .	Africa . .	In flocks.
Spotted Flycatcher	April 16 to May 31 . .	Whole coast.	Africa . .	Singly.
Nightjar . . .	April 20 to May 20 . .	E. of coast .	India & Africa	In flocks.

Notes to above Table.

A. Dates of Arrival.—The date set first is the earliest in an experience of many years, and can only be equalled by a keen observer residing near the southern coast. When an arrival is satisfactorily authenticated as early as any of the dates put first, it is worthy of note in an ornithological journal. The second date is that by which an observer in an inland or northern county must give up all hope of the species nesting in his district, if previously unobserved.

B. The notes as to place of landing are from the nature of things unproven, but many recorded observations go to prove their substantial accuracy.

C. The winter habitat can only be approximately given, pending wider research.

D. The word "singly" is used in contrast to the "flights," and means that there is no proof of a large flock crossing in company.

XXIII

BLUE COLUMBINE AND CHEQUERED DAFFODIL

"Thou perceivest the flowers put forth their precious odours,
And none can tell how from so small a centre comes such sweet,
Forgetting that within that centre Eternity expands
Its ever-during doors, that Og and Anak fiercely guard."
—BLAKE.

HOWEVER much one may go about in search of all the naturalist most delights in seeing, one is bound to miss a number of notable things. My experience is that a season never ends during which I have not come by chance, as it were, on something desirable, perhaps long desired, yet never previously seen ; and the fact that it was stumbled upon when not being sought, that there was the element of surprise, added greatly to the pleasure. It may be a bird, or mammal, or some rare or lustrous insect ; but it is in plant life where the surprises that make us happy are most frequent, even to one, like myself, who is not a "painfull and industrious searcher of plantes," and knows little of their science. For not only are the species so numerous as to be practically innumerable to any person who would see all things for himself, but many of the most attractive kinds are either rare or exceedingly local in their distribution.

To give an instance : One day during the late summer, between Salisbury and the neighbouring village of Winterbourne Gunner I found a small, pretty red flower, new to me, growing by the road in the greatest abundance. For a space of three or four hundred yards the hedge-side was sprinkled with its lovely little stars. It was a geranium, prettier than any red geranium known to me, the delicate tender colour resembling that of the red horse-chestnut flower. On inquiring at the cottages in the neighbourhood the people told me they knew the plant, but had no name for it ; also that they had never seen it at any other spot. It turned out to be *Geranium pyrenaicum*, a native of central and eastern Europe, and believed by some botanists to be indigenous in this country. It probably varies in colour, since it is described in some of the books as purple or pale purple, whereas in the flowers I found there was no trace of such a colour.

I had but a short time before met with a similar experience with regard to another more important flower—our wild columbine.

In spring I was staying at a small village among the Wiltshire downs, a

few miles from the Dorsetshire border. It was a lonely-looking country, where, out of sight of the fertile vales and hollows in which people live and cultivate the ground, one can look over long leagues of the billowy downland and see no human habitation and no trees except a few widely separated hill-top groves or clumps of pine. In May I visited one of these groves in cold, windy weather, and was delighted to find on the further side a vast brake of old furze interspersed with holly, thorn, and bramble, filling the deep depression between the two opposing downs and spreading partly over the lower slopes. Here I was glad to escape from the wind's violence, and wished for no better place. How far the growth extended I did not see, and had no wish to; sufficient for the day was the pleasure thereof; for now the furze was arrayed in its shining yellow masses of bloom and the warmer air in that sheltered hollow was laden with the delicious spicy fragrance.

My next visit was in June, when the yellow furze-flame had burnt itself out, and then, close to the spot where I had rested, I discovered my first columbine, and wondered if it could be an outcast in that lonely place. The plant was nearly three feet high, growing in a furze bush, and the excessive thinness of the single stem and the fewness of its leaves gave it a starved appearance; but the flower was large, like that of the garden plant, its colour a deep, beautiful blue. A few more flowers were found in that part of the brake, but going further another day I came to a place where it grew abundantly over an area of about twenty acres of furze, on the higher ground. An old man, a keeper who had charge of this part of the ground, told me he had known the flower from his boyhood, and that he could fill a barrow with "collarbinds," as he called them, any day. All these flowers were of the same true blue, and we are told by some botanists that this colour in the flower, found in chalky districts in southern England, shows the plant to be indigenous; but that purple and reddish is a proof that the plant is a garden escape.

It was a rare pleasure to see the columbine in its own home—the big, blue, quaint flower blooming in the shade of rough furze bushes—and for the first time in my life I admired it, since in the garden, where as a rule its lustre is dimmed by gaudy exotics, it has an inharmonious setting. It is not strange that it should be called by bird names, but it strikes one as curious that the names should be of birds

so wide apart in our minds as eagle and dove. *Aquilegia*, because the inverted tubes at the base of the flower are like the curved claws of an eagle; and columbine, from its dove-like appearance, each blossom forming a cluster of five dark-blue fairy fantails, with beaks that meet at the stem, wings open, and tails outspread.

No more columbines were found, although I looked and inquired for them in all that part of the country; but at one spot, a small village about four miles from the furze where they flourished, I was told by the cottagers that up to within three seasons ago they, too, had had columbines. They grew abundantly in a furze patch and by a hedge half a mile from the village: it had always been so, and every summer the children went out to gather them, so that they were seen in every cottage, and as a result of this misuse the flower has been extirpated.

If comparatively few persons have seen the blue native columbine, just as few, perhaps, have found, growing wild, that more enchanting flower, the snake's-head or fritillary. Guinea-flower and bastard narcissus and turkey-caps are some of its old English names, the last still in common use; but the name by which all educated persons now call it is also very old. Two centuries and a half ago a writer on plants spoke of it as "a certaine strange flower which is called by some Fritillaria." Another very old name, which I like best, is chequered daffodil. As a garden flower we know it, and we also know the wild flower bought in shops or sent as a gift from friends at a distance. In most instances the flowers I have seen in houses were from the Christchurch meadows at Oxford.

I know what white, what purple fritillaries
The grassy harvest of the river-fields
Above by Ensham, down by Sandford, yields,

says Matthew Arnold in his beautiful monody; the wonder is that it should yield so many. But to see the flower in its native river-fields is the main thing; in a vase, on a table, in a dim room it is no better than a blushing briar-rose or any other lovely wild bloom removed from its proper atmosphere and surroundings.

It was but a twelvemonth before first finding wild columbine that I had the happiness of seeing this better flower in its green home, a spot where it is, perhaps, more abundant than anywhere in England; but the spot I will not name, nor even the county; the locality is not given in the books I have consulted, yet it is, alas! too well known to many whose only plea-

sure in wild flowers is to gather them greedily to see them die indoors. For we live indoors and reck not that nature is deflowered, so that we return with hands or arms full of some new brightness to add to the decorations of our interiors.

Coming one May-day to a small rustic village, I passed the schoolhouse just when the children were trooping back in the afternoon, and noticed that many of them were carrying bunches of fritillaries. They told me where they had got them, in a meadow by the neighbouring river; then one little girl stepped forward and asked me very prettily to accept her bunch. I took it, and gave her two or three pence, whereupon the other children, disregarding the imperious calls of their schoolmistress, who was standing outside, all flocked round and eagerly pressed their nosegays on me. But I had as many as I wanted; my desire was to see the flower growing, so I went my way and returned another day to look for the favoured spot. I found it a mile from the village, at a place where the lovely little river divides into three or four, with long strips of greenest meadow-land between the currents, with ancient pollard willows growing on the banks. These were the biggest pollards I have ever seen, and were like huge rudely-shaped pillars with brushwood and ivy for capitals, some still upright, others leaning over the water, and many of them quite hollow with great gaps where the rind had perished. I saw no chequered daffodils, but it was a beautiful scene, a green, peaceful place, with but one blot on it—a dull, dark brown patch where the ground had been recently ploughed in the middle of the largest and fairest meadow in sight. A sudden storm of rain drove me to seek shelter at one of the old crumbling pollards, where, by cramming myself into the hollow trunk, I managed to keep dry. In half an hour it was over and the sky blue again; then coming out, that brown piece of ground in the distance looked darker than ever amidst the wet sunlit verdure, and I marvelled at the folly of ploughing up a green meadow in spring; for what better or more profitable crop than grass could be grown in such a spot? Presently, as I walked on and got nearer, the unsightly brown changed to dark purple; then I discovered that it was no ploughed ground before me, but a vast patch of flowers—of fritillaries growing so close that they darkened the earth over an area of about three acres! It was a marvellous sight, and a plea-

sure indescribable to walk about among them; to stand still in that garden with its flowers, thick as spikes in a ripe wheat-field, on a level with my knees; to see them in such surroundings under the wide sky in that lucid atmosphere after the rain, the pendulous cups still sparkling with the wet and trembling in the lightest wind. It would have been a joy to find a single blossom; here, to my surprise, they were in thousands, and in tens and in hundreds of thousands, an island of purple on the green earth, or rather purple flecked with white, since to every hundred or more dark spotted flowers there was one of an ivory whiteness and unspotted.

But it is not this profusion of blossoms, which may be a rare occurrence, it is the individual flower which has so singular an attractiveness. It is, I have said, a better flower than the blue columbine; in a way this tulip is better than any British flower. A tulip without the stiffness and appearance of solidity which make the garden kinds look as if they had been carved out of wood and painted; but pendulous, like the hairbell, on a tall, slender stem, among the tall, fine-leafed grasses, and trembling like the grasses at every breath; in colour unlike any other tulip or any flower, a pink that is like a delicate, luminous flesh-tint, minutely chequered with dark maroon purple.

Our older writers on plants waxed eloquent in describing their "fritillaria" or "Ginny-flower," and even the dryest of modern botanists writes that it is a flower which, once seen, cannot be forgotten. That is because of its unlikeness to all others—its strangeness. In the arrangement of its colours it is unique, and, furthermore, it is the darkest flower we have. This effect is due to the smallness of the tessellated squares, since at a distance of a few feet the dark violet maroon kills or absorbs the bright delicate pink colour, and makes the entire blossom appear uniformly dark. The flower which, combining strangeness with beauty, comes nearest to the chequered daffodil is the henbane, with an exceedingly dark purple centre and petals a pale clouded amber yellow, delicately veined with purple brown. But in the henbane the dark and pale hues are seen contrasted. In flowers like these, but chiefly in the chequered daffodil, we see that the quality of strangeness, which is not in itself an element of beauty, has yet the effect of intensifying the beauty it is associated with. Thus, if we consider other admired species—briar rose,

pink convolvulus, rock rose, sea poppy, yellow flag, bugloss, blue geranium, water forget-me-not, flowering rush, and grass of Parnassus, for example (and many more might be named), we see that in beauty, pure and simple, these equal and exceed the fritillary; yet this impresses us more than the others, and surprises us into thinking it more beautiful because its beauty strikes us more sharply. It is not sufficient to say that the sharper impression is due merely to the unusual appearance. I rather incline to believe that the source of the vivid interest excited is that faculty of the mind supposed to be obsolete, but which still faintly lives in all of us, though we may be unconscious of it—a faculty which sees a hidden meaning or spirit, in all strange appearances in the natural world. It is the "sense of mystery," and is with us in sight of a magnificent and strange sunset, and of any unusual atmospheric phenomenon or aspect of nature, and, in a less degree, in all strangeness, down to the smallest objects that engage our attention—an insect, a flower, even our chequered daffodil of the river-fields.

XXIV

TREES AND SHRUBS

> "But Lord! so I was glad and wel begoon!
> For overal wher that I myn eyén caste
> Were treës clad with leves that ay shal laste,
> Eche in his kynde, of colour fresch and grene
> As emeraude, that joye it was to sene."
>
> —CHAUCER.

NOT even the turf of English hillsides and meadows, that wonderful and peculiar gift of Nature to our islands, has so deep and characteristic an influence on the scenery of England as the wealth and variety of our wild-growing trees and shrubs. There is scarcely another country in Europe with so small a proportionate area of genuine forest land; and yet, owing to the happy dispersal of a wide variety of species, to the moist and equable climate which nurses them in luxuriant though steady growth, and above all, to the natural network of hedges which gives a harbourage to verdure and great timber in nearly every nook and corner of the soil, there is no land in which the softness and sweet outline of free foliage makes so continually an appeal to the eye. Except where Nature has been ex-

cessively drilled and schooled to the nurture of a single predominant species—generally an exotic to the soil—this rich variety within narrow limits is no less remarkable and attractive than the characteristic stamp which is given to most regions of England by the prevalent luxuriance of a particular kind of tree. From the steep, hanging beechwoods of the chalk or limestone ranges, the eye traverses wide vales and plains massed with the crowns of high and heavy elms, or thickly beset with round and virile oaks; in other quarters of England, the poplar whispers alone, high over the wide, green cattle-marshes; there are vales of the west where the deep old lichened orchards guard dew even at noonday in their caverns of August shade; and though the north has no elms, except the rounder, more feminine wych-elm, "the oak, and the ash, and the bonny ivy-tree" have been taken, in the old ballad, as the very symbols of home for the Northerner, who knows, too, how clean and deep is the sycamore shade, by the grey doorways of his dale-end farms. There are but few English districts in which some particular kind of tree or copsewood does not form one of the strongest elements in the scenery; and there is no single tree or little shrub which is not bound up deeply and indissolubly for the mind with the whole life and aspect of some landscape or region where it is most at home in the soil, and seems, in a curious way, to bring most other things into a kind of subordinate agreement to its own determining expression of growth.

In ages past, probably for more than a thousand years, the native trees of Britain have been reinforced from time to time by the introduction of foreign species, many of which, like the larch, the Spanish chestnut, and the black and Lombardy poplars, have long been so completely assimilated with our landscapes that they form as natural and characteristic elements as the very oaks and hawthorns themselves. Yet to all whose eyes and thoughts dwell year after year on the varied tracts of copse, brake, and woodland, with their sky-lit tracery in winter, and all the leafy gradations of unfolding spring, there comes a keen sense of discrimination for their relative degrees of antiquity as features of native English scenery; the instinct comes naturally to read the history of each landscape, to perceive what tracts are still untouched oases of the ancient greenwood, and which bear the newest traces of admixture, and

human culture, and a nature of second growth. As with the human population of England, so with its trees; there are some stocks which once flourished far and wide across the face of the land, and others, later comers, which have generally thrust them aside into waste, unregarded corners, and hold pre-eminence in their stead. Foremost among the trees and bushes which have suffered the slow disinheritment of expulsion are those marsh-loving species, such as the sallows, willows and alder, which once filled league after league of the primeval thickets of the lowland valleys and plains. There are probably few trees to-day less generally known than this water-loving alder. Upright and stiff in growth, with a single straight stem thickly branched with horizontal boughs, it does not often exceed thirty feet in height, and its rounded foliage is late in unfolding (like most streamside vegetation) and early in acquiring the dull, tarnished green of the later summer woodlands. But sometimes, in a rich soil and air, it will fling upwards a grand, columnar shaft to the height of a full-grown oak; and where a quadruple line of these giant alders frames some dark, moorhen-haunted pool, their stately evenness of growth gives them an effect of unusual interest and grandeur. There is an appearance of common purpose about all such trees grouped to a single form, which gives them a strange illusory aspect, as almost of sentient intelligence. From the close growth of its lesser, branching twigs, and the abundance of the little cone-like seed-vessels which cling tenaciously to their hold, the alder in winter makes the densest pattern against the sky of all our deciduous trees. And in April-time, before the tardy, reluctant leaf-buds have more than quilled the branches with the glint of green, the tiny female blossoms, of brilliant red, may be discovered starring the twigs, while into them, as into the similar gem-like flowers of the hazel-tree, the spring wind sifts the pollen from the bobbing catkins as they open to maturity in showers and sun. Other characteristic bushes of the marsh are the grey-leaved sallow, or palm-willow, with its silky knobs that swell from close silver to spiky gold before a green leaf is seen on any bough, and when all the sedges lie beaten in frost-bleached swathes; and the light, wiry water-guelder, the wild original of the globe-flowering guelder-rose of old-fashioned gardens, which makes all the hedges in the water-meadows gay with its bold, cream-white cymes of

blossom in the verdant days of June, and poises its loose red berries above the vivid crimson of its thinning leaves, when the lapwings are flocking on the chalk down over the river-valley, and the drawn sluices gush with October rain. There are certain other willows, mainly of smaller and rarer kinds, which love the peaty islets and the black alluvium of the fens; but most of the better-known species of this numerous and intricate tribe dislike to dip their feet in a slough, and prefer a soil sound and firm, though close beside the water. In such a situation, the common glossy-leaved crack-willow will often increase to a fine and free-growing tree, if it escapes the general fate of being pollarded into Dutch conformity with an endless line of knob-headed neighbours. One of the most riotous stains of colour in the whole of the country year is the banded glow of a cultivated osier-bed in late November, when each slim rod, nearly leafless, evenly changes upwards from green, through yellow, into tumultuous orange and brillant crimson, like the rainbow's edge, above.

The two chief forest trees of England, those strictly native species which may still be found growing in large unmixed tracts in forests, parks, and chases where centuries have disturbed them little, are the oak and the beech. The scenery of the woodlands in which these two great trees are mainly predominant is of very different types. There is a stubborn individuality about the growth of the oak which demands, if not actual isolation, at any rate free access of air and sun; and thus it comes about, that while an ancient beechwood is a deep home of unbroken, cavernous shadow, in a forest of oaks the sunlight is perpetually about us and around, pouring in golden gulfs between each massive monarch and his neighbour, warming soft glades and innumerable wandering alley-ways of knee-deep bracken, and intermingling the age-old solemnity of the Druid growths with the busy, fleeting life of plant, and animal, and bird. The bare, white heart-wood in the old oaks' upper timbers juts from their airy, sun-warmed domes like the horns of the resting deer from the depths of the bracken below; large, tawny butterflies flit and float in the sunshine over wide sweeps of fern, or chase one another, in upward flight, high athwart the untrodden summits of the fronting boughs. Everywhere is the sound, green forest turf that lies like velvet beneath the fallen bearded limbs, and the clean decay of innumerable crum-

STRIPPING OAK BARK.

From a photograph by
Henry Irving.

bling acorn-cups; and when the birds are still, and the squirrel, which drums in anger at the wanderer's intrusion, stands at gaze for a moment on his shadowy bough, there swells upon the ear the droning murmur of the multitudinous insect life that makes every great oakwood its chosen and peculiar home. Beautiful, too, is a great wood of beech, but with a beauty chiefly born of the coolness and shadow of its remote, columnar aisles, and of the very depth of its withdrawal from the preoccupations of the outer day. In the midmost shade of the beechwoods little grows upon the dark and leaf-embittered soil but a few wiry bramble-stems, or here and there the pale, uncanny bird's-nest orchids, which are parasitic upon the roots of the trees; and except for a jay or blackbird that now and then startles the stillness as it slants upward, noisily chattering, from ground to bole, the life of the birds is concentrated in the roof of foliage raised high above our heads. For charm of variety and colour, a beechwood is most beautiful either from the outside, or at a point near its edge, where the large pattern of the chequered sunlight swings rhythmically across its floor. Here there are often wide gardens of primroses and white anemones, which bloom while the leaves are first budding in April on the boughs above; and earth and sky grow merged in magical strangeness on the hillside slopes where the bluebells shed floods of colour in late May, before the shadow deepens as the leaves increase, and the vaulted depths of the beechwood return to their midsummer darkness and stillness. Where the hanging front of the beechwood faces the outer world, there are two short periods of the year, in mid-May and mid-October, when its beauty can hardly be surpassed. The newly opened foliage has a tenderness of colour and a delicacy of outshaken form which no other British tree can fully equal, when massed on a great wood's edge; and when, in a flaming and rain-washed October, the orange and scarlet of the dying leaves is stabbed through by the sunlight, and tinged to a deeper purple and crimson by the lustre of the underlying boughs, it is the supreme moment of all autumn's splendour.

The beech loves a dry hillside, with an underlying calcareous mass of chalk or limestone; the oak endures most vicissitudes of soil, but is nowhere more native and luxuriant than on the wastes of wealden clay which hold the rains in endless pools and runnels, but are naturally distinct

from marshlands, although, under pressure of wheels or trampling horses, they founder into bottomless sloughs. The oak-forests of the clay are of a denser and more gloomy growth than the open woodlands of the deer, of bracken, and of butterflies; beneath their shrouding thickets, there is a lesser growth of straggling hawthorns and hollies, but no great variety of verdure and blossom. The clay naturally supports but a restricted and rather monotonous arboreal growth; in parts of Essex and Hertfordshire the prevalent tree is the scanty hornbeam, with its spare, twisted trunk, and its general aspect of meagre endeavour. A wood of pollarded hornbeams is the most featureless and uninteresting form of all our forest scenery. Wild holly-bushes are generally found scattered even in the stunted hornbeam woodlands; indeed, the holly is one of the most persistent and characteristic of all British trees and shrubs, and wherever there is an unmistakable bit of wild woodland England, there will the holly be found, brave and lustrous amid the barest winter decay, and a home and fastness of all hardy winter birds. It is one of the most conspicuous species in those mixed, broken thickets, freely interspersed with spaces of open turf, which still remain, on steep, unploughed hill-slopes or in waste no-man's-lands and parish-ends, as one of the most striking and unspoilt relics of the elder England. The largest tree of all such "Thornaby waästes" is generally the ash, which loves the sound loam and delicate air of the open slopes, and often (as Tennyson again has said) nurses in such places the scented violets, white and sometimes blue, in the angles of its spreading roots. But the ash and the holly are only two trees of many. Here, commonest of all, are the great old lichen-bearded hawthorns, and all the denser thickets of their seed-fallen growth. When the great banks of hawthorn foam to whiteness in the time of nightingales, it is the triumphal hour of English flower and song. As the hawthorn-foam fades red and tainted, then the wild roses open their exquisite shell-pink petals on every slope of the thicket. A little later again, the large, brittle elder-brakes hang out their heavy-scented creamy discs, that shine like swung censers in the warm, tempestuous nights. Earliest of all, the loose white stars of the blackthorn opened and let fall their petals from the still leafless, angular boughs; no fastness of the thicket is so iron-like and impenetrable with its spines as the dense, black

JAYS.

From a water-colour by
Frank Southgate, R.B.A.

earthy lair that lies in the midst of those close-set stems. And in the heart of May, when the bluebell beds were purest and deepest at the fringe of the larger thickets, the pink-flushed clusters of wild apple bloom seemed to answer in vernal gladness from the boughs above. All through spring and early summer these open, broken thickets are riotous with the life of blossom and bird; and nowhere else do we seem to come so close to the greenwood of early England, or feel so sure, with reason, that the scene with all its sunshine, colour and song is the same which woke their English music from the hearts of Chaucer and Shakespeare long ago.

Never is there such a varied and characteristic growth of the lesser trees and shrubs as among the brushwood and thickets that dot the sides of the great chalk downs, or form the open, rambling, half-wild hedges of their lower slopes and fringes. Most typical of all the downland bushes is the dark, evergreen juniper, that still flecks many of the steeper slopes of thyme-scented sward with its dappled, primaeval growth as thickly as the clouds in a mackerel sky, or the white forms of the pasturing sheep that roam among its own darker archipelagoes. On the more exposed hillsides the juniper-bushes are wind-clipped, round, and stunted in their growth; but within the sheltering curves of the smooth, unbroken hills, or where they yield one another mutual support in a denser thicket beside some wind-breaking thorn, they shoot forth in loose, feathery sprays of an inimitably graceful wildness. In early summer the young shoots of the year are frosted with a silvery bloom that brightens their dark evergreen boughs with an austere and tender freshness, a beauty wholly in accord with the restrained simplicity of the unbroken curves of the great chalk downs; and this same puritan contrast of dark and silvery hues is presented by most other of the dominant tree-growths of the chalk. Black yews stand dotted on the hill, or massed in overshadowing thickets where the rabbits tunnel in the white soil at their roots; and silvery white against their slopes of gloom, long wreaths of the wild chalk-loving clematis shake out their downy seed-beards in the clear October sunshine. Pale, too, in every ruffling breeze upon the down stand out the wayfaring tree, or mealy guelder-rose, and its brother, the taller white-beam, with its white-backed leaves more deeply toothed and lobed; in days with a long, even wind they dwell for hours

at a time as though carven of whiteness; and when in autumn the dying leaves curl each together like a shell, in breeze and calm alike they form wide splashes of cold and surf-like grey. Under the dark yew-caverns and spires of juniper, the chalk-pits shine milk-white and clear; against the denser blackness there gleams the cold silver of those withering leaves, and the shining seed-beards of the traveller's joy; and where a stray limb of beech or hawthorn hangs out an autumn banner of amber or crimson in the sun, this core of vivid splendour among all such puritan tones seems to string them to their utmost expression of clean and uplifting contrast.

Scarcer shrubs that also love the chalk are the common kind of buckthorn, with its trusses of yellowish flowers, and brown-black berries in autumn, that yield a strong greenish dye; the privet, which often grows wild in the mixed growth of the hedge-belts of the lower slopes, and fills the thicket with the dubious fragrance of its white blossoms in July; and the frilled, early-blooming spurge-laurel, which ranks with the spiny butcher's broom as among the smallest of British plants with a claim to the name of shrubs. In its chief wild haunt in Britain, the box also grows in large mixed thickets on the chalk. The dogwood, too, is a specially chalk-loving shrub, though, in a more or less introduced and fostered state, it does much to brighten the hedgerows in many districts with its small discs of milky flowers, and flat compact clusters of dusky berries. The spindle-wood, generally a spare bush of hedge-row growth, but occasionally found as a tree, is among the dullest-looking of all our shrubs in its summer dress; but it makes fullest amends when its bare, wiry boughs are gemmed in winter with the rich pink berries that split symmetrically to show the orange seeds within. Another common hedge-row bush which sometimes grows to a middle-sized tree is the true British maple, the only native species of this tribe; it has loose clusters of yellow-green flowers at midsummer, which develop winged seeds smaller than those of the sycamore, though like in shape; and the leaves also are much smaller, and more deeply lobed. The mountain representative of the lowland whitebeam, service, and wayfaring trees is the mountain ash or rowan, so well known both in Scotland and south of the border as the companion of the wild moorland birch, and of the alder and aspen by the tumbling, rock-bound streams where the heather nods on the

crag. Scotch firs and heather are companions in many and many a landscape picture of the lands beyond Trent, where the elm is found no more ; but none the less the Scotch fir is far more rarely a natural and native growth in the wilds of the deer-grass and the ling, than aspen, alder, birch, hawthorn and holly.

For of all our native British trees, the Scotch pine, or fir, is probably the rarest in its ancient and natural haunts, and the commonest, owing to its hardiness, picturesqueness and speed of growth, in transplanted and introduced conditions. The ancient Caledonian pine-forest is believed to survive only in one limited tract ; on the other hand, the past hundred years have seen thousands upon thousands of acres planted with this tree in nearly every part of our islands. The great pine-woods of Windsor Forest and western Surrey are, for example, a mere nursery garden of late Georgian growth. Thus the Scotch fir, an original British species but a foreigner in most of its present haunts, forms a link between our genuine native trees and all those other kinds which have been naturalized for many centuries, but are none the less exotic in origin. Though the point is scarcely capable of proof, there is good reason to believe that the common elm is not of the genuine British lineage, though it has long been so deeply characteristic of some of the most typical English landscapes. If the elm was actually introduced by the Romans, as is with likelihood supposed, it was only the forerunner of many other of our best-known trees which without doubt came to us by similar means. No account survives of the introduction of the lime ; but even to-day it has not established its place as a free denizen of the natural wood and field, and bears every sign of being an exotic species in origin, in spite of its long habituation to English skies. The sycamore is another such species ; according to tradition, it was first introduced, in the neighbourhood of Edinburgh, by Mary Queen of Scots. So too with the sweet or Spanish chestnut, which for a long time past has held a conspicuous place in many of the less ancient and natural woodlands and copses, especially in the south-eastern counties. It is doubtful whether the downy-leaved white poplar is a true native species, as is certainly, on the other hand, the smaller and greener-leaved aspen ; the large, branching, brittle black poplar is an undoubted introduction, while the

Lombardy poplar, with its tall, tapering column, is nothing but a cultivated variety of this last. Of the many coniferous trees which have been acclimatized with greater or less success in parks and gardens, the larch and the spruce alone have become sufficiently general in coverts and woodlands to appeal to the eye as English species by naturalization, if not by native right. The tender, misty green of a budding April larch-cover is, indeed, one of the best-known and most beautiful features of spring; but the larch in England has never the rugged and virile growth of the same tree where it shoots from the rock-strewn mountain-sides of its Alpine home, above the wild laburnums that line the torrent-beds with gold. Many centuries are needed before even the most vigorous and self-adaptive of such alien growths can attain, like the sycamore and elm, to that aspect of perfect harmony with their surroundings which is inseparable from the beauty of English trees, where they watch over the age-old and natural soil.

XXV

MIDSUMMER PLANTS

"Art cannot rival this pomp of purple and gold."
—Emerson.

NOW that midsummer has come a great change has passed over the face of nature. The nesting season is over; the voice of the cuckoo is no longer heard; the woods are almost silent. The delicate flowers of early summer have disappeared before the heat of July and August, and for "the searcher after simples" it might seem that much of the interest of the season was over.

But if, in many cases, the flowers of midsummer are coarser than those of spring, they make, many of them, a brave show during the hot months in our lanes and open fields. By the wayside the yellow St. John's-worts are in bloom, and the purple mallow, together with eyebright, and bell-flowers, and crimson vetches; while creepers are trailing over the hedgerows—bryony, and clematis, and the wild hop, and the large white convolvulus. In chalky districts the dark mullein (*Verbascum nigrum*) is very conspicuous beside the dusty roads, with its tall spikes of bright yellow flowers, the stamens of which are clothed with

THE OAK TREE.

From a photograph by
Charles Reid, Wishaw.

purple hairs. The cornfields and waste spaces are now aglow with scarlet poppies; and sometimes the viper's bugloss is so abundant as to make with its handsome azure flowers a distinct feature in the landscape. Last year it covered the slope of a chalk hill above the Meon valley to the extent of many acres, and presented a glorious expanse of blue visible at some considerable distance. In many of our woods the gorgeous foxglove is now in bloom, and when the stately plant is seen in any profusion it makes a fine show with its handsome purple flowers. Other and more interesting plants may also be seen on some of our Hampshire Hangers. Gilbert White noticed what he calls *Serapias latifolia* or helleborine growing in the High Wood at Selborne, under the shady beeches. This tall orchid (*Epipactis latifolia*), with long leafy racemes of dull green or purplish flowers, still flourishes in its old locality; and with it a rare variety, or sub-species, with tufted stems and flowers of a violet-purple hue, which, although not recognized by our great naturalist, is the most interesting plant in the flora of Selborne. In company with this scarce plant (*Epipactis purpurata*), the strange, sickly-looking *monotropa* or bird's nest (*Monotropa hypopitys*, L.) will be seen, perhaps, as White thought, parasitical on the roots of the beech-trees.

But in July and August our choicest plants are to be sought, not in woods or hedgerows or on open downs, but in the wide stretches of forest and moorland and unreclaimed bog which in spite of modern encroachment still exist in many parts of England. In the county of Hants there is the royal forest of Woolmer, three-fifths of which, before the formation of the parish of Blackmoor, lay within the bounds of Selborne, and consisted, as White tells us, of a "tract of land of about seven miles in length by two and a half in breadth, covered with heath and fern, somewhat diversified with hills and dales, without having one standing tree in the whole extent." Since then, the forest has been partially enclosed, and planted with larch-trees and Scotch firs; and Woolmer Pond, which he speaks of as "a vast lake for that part of the world," is considerably diminished in size, yet now as then it is the resort in winter-time of "vast flocks of ducks, teals, and widgeons of various denominations"; and in summer the wild flowers noticed by White still flourish in their ancient haunts. He speaks specially of "the bogs of Bin's Pond," a swampy stretch of moorland where the snipe may be

heard "drumming" in early summer, and there he noted the round-leaved and the long-leaved sundews, the marsh cinquefoil (*Comarum palustre*, L.), and the creeping bilberries or cranberries. This last plant (*Vaccinium Oxycoccos*), common enough in peat bogs in the north of England, is rare in Hampshire, where it seems to have been first discovered by Mr. Yalden, White's near clerical neighbour, about the year 1760; and the two friends doubtless went together to Bin's Pond, where the Vicar of Newton Valence pointed out to the naturalist of Selborne the beautiful little evergreen plant, with its bright red flowers, trailing over the sphagnum moss.

But interesting as Woolmer Forest undoubtedly is as a hunting-ground for the naturalist and from its associations with Gilbert White, it cannot compare with the New Forest in the richness of its flora. Indeed, the Forest is the home of some of our rarest British plants. We have already mentioned the long-leaved lungwort (*Pulmonaria angustifolia*), so conspicuous in the woods near the ruins of Beaulieu in early spring. In June the marsh Isnardia (*Ludwigia palustris*) may be found by those who know the exact spots in one or two of the Forest bogs, and nowhere else in England. But later on, during the months of July and August, is the best time to visit the Forest. The rare and handsome gladiolus (*G. communis*) is then in flower, and may be seen growing among the bracken in several of the open glades. It is one of our stateliest British plants, and is only to be found in Hampshire. On the moist boggy heaths the blue calathian violet (*Gentiana Pneumonanthe*), the largest of our English gentians, may be found; while its near relation, the little cicendia (*Microcala filiformis*), opens its bright yellow blossoms in damp sandy places.

Very rich, too, is the Forest in bog-plants, and among these some choice species are now in bloom. The beautiful little bog pimpernel (*Anagallis tenella*), with its leaves arranged in opposite pairs and its erect rose-coloured flowers, is to be seen everywhere, and the lesser skull-cap, and the yellow asphodel easily distinguished by its narrow sword-shaped leaves and spike of starlike flowers; while in some districts the buckbean (*Menyanthes trifoliata*) brightens every pool and is so common that many of the fields, we are told, are called "the buckbean mead." One or two rare British orchids are now in flower in the Forest bogs. Well do I remember the feeling of delight with which, after many

hours searching in the hot August sunshine, I at last found the little marsh twayblade (*Malaxis paludosa*) in a spongy bog near Brockenhurst. This is the smallest of our British species, varying from one to four inches in height; and withal very difficult to find, its inconspicuous spikes of light greenish-yellow flowers resembling so closely the colour of the sphagnum on which it grows. But more memorable in my botanical annals was the day on which I first saw *Spiranthes aestivalis*, the summer lady's-tresses. This exceedingly choice plant, bearing a slender spiral spike of white flowers, is one of the rarest of British orchids, being found only in the New Forest, and perhaps in one locality in Worcestershire. It was not known to exist in England till the year 1840, when it was discovered by Mr. Branch, or, according to Watson, by Mr. Jansen, on "a small tract of sphagnous bog" between Lyndhurst and Christchurch. In the following year the locality was visited by the distinguished botanists Dr. Bromfield, the author of the *Flora Vectensis*, and Mr. Borrer, who found the plant "in considerable plenty; some of the plants being a foot in height." Since then this "small tract of sphagnous bog" has been regarded with much veneration by the few botanists fortunate enough to know the spot. Several times had I visited the Forest for the purpose of finding this rare orchid, but never could I discover the position of the bog in question. At length, only last summer, a botanical friend sent me the welcome information that he had been told the whereabouts of this sacred locality. We accordingly met at Brockenhurst Station, and after a ride of some five or six miles, we left our bicycles against an oak-tree, and following the course of a forest stream soon came upon a stretch of sphagnous bog which answered the description given by my friend's informant. Starting at opposite ends we at once began a careful and difficult search, sinking at every step up to our knees in the soft treacherous swamp. The sundew was there in abundance, and sweet-gale, and cotton-grass, and yellow narthecium, and *Rhyncospora alba*, a characteristic bog-rush; but for some little time no sign of *Spiranthes* could be seen. At last, almost at the same moment a shout from each of us proclaimed that the long-sought treasure had been found. Some dozen spikes only we saw, but doubtless others existed.

In most of the Forest bogs both the long-leaved and the round-leaved sundews are abundant, and in several

localities the larger *Drosera anglica* has of late years been found. These pretty little plants are, it is well known, insectivorous, a ruthless habit little suspected by our early botanists. Old Gerarde has much to say about "the little herbe which groweth very low, and hath a few leaves like an eare picker, hairy and reddish, and having moisture upon them at the driest time of the yeare and when the Sun shineth hottest at high noone," but he knows nothing of its carnivorous ways. Neither indeed did George Crabbe, when in *The Borough* he speaks of some of the bog-plants near Aldeburgh :—

For there are blossoms rare, and curious rush,
The gale's rich balm, and sundew's crimson blush,
Whose velvet leaf, with radiant beauty dress'd
Forms a gay pillow for the plover's breast.

In company with the sundew, the pale butterwort (*Pinguicula lusitanica*) will be found in most of the Forest bogs, and like its "cruel red-haired neighbour," this delicate little plant has acquired the curious and uncanny habit of catching and devouring live flies.

At this season the flowering fern (*Osmunda regalis*), sometimes called the royal fern and Osmund royal, is in full beauty. It is indeed a noble and stately plant, sometimes growing to a height of eight or even ten feet and forming thickets which can be seen at some distance. Gerarde when he first saw a clump of them afar off mistook the large leaves "spread abroad like wings" for those of the ash-tree, and "much wondered thereat, thinking that he had never seen young ashes growing upon a bog." Formerly it seems to have been a common and abundant plant in many parts of the country. In the days of Queen Elizabeth it grew "in the midst of a bog at the further end of Hampstead Heath near London, at the bottom of a hill adjoining to a small cottage" ; but by the year 1633 "it was all destroyed." In Hampshire, as we learn from another early writer, it seems to have been common in "moist, boggy ditches" ; and as late as the middle of the last century it might be seen in parts of the New Forest "rearing its golden-brown panicles six feet high, and covering in patches nearly a quarter of an acre." In the neighbourhood of Dorking, John Stuart Mill found it in great luxuriance, forming "large and tall thickets visible at a great distance." The name of "Osmund Royal" dates back to mediaeval times, for it is so called by all the early herbalists. Gerarde also speaks of it as "Osmund the water-man," a hero

of Celtic tradition; while de L'Obel tells us that the epithet "royal" refers to its singular and excellent virtues. We should otherwise have supposed that it was meant to describe its stately and majestic appearance.

XXVI

THE ANIMALS OF THE CLIFFS

"Strange things are here of sea and land:
Stern surges and a haughty strand,
Sea-monsters haunt yon caverned lair,
The mermaid weaves her briny hair."—R. S. HAWKER.

WITH the exception of the marten and the wild cat, all the few surviving carnivora of Britain are still to be met with in the Cornish cliffs. Seal, otter, badger, fox and polecat harbour the year through along the littoral, sharing its rocky strongholds with predatory birds and innumerable seafowl. These creatures have enjoyed no protection save that afforded by the strength of their fastnesses to which alone and to the struggle they have made for existence they owe their escape from extermination.

The south coast of the county, with its sandy cones, sunny estuaries and rich colouring, is oftentimes all smiles, like Reynolds' personification of comedy, but the north, with its lofty black cliffs and absence of all but the tiniest havens, is always stern, inhospitable and tragic, warning mariner and landsman to keep their distance. At Boscastle, Tintagel and other wild spots colossal walls of rock fall sheer to the foam with only a shelf here and there whereon the now rare chough builds its nest; for the most part, however, the face of the cliffs is slightly tilted, giving Nature the opportunity she ever seeks to soften with vegetation her severest features.

And how tenderly and becomingly she has performed the difficult task! She has dappled with lichen or bearded with byssus every crag and outcropping rock; she has lined with seaferns every niche and cranny, and cushioned with thrift or spangled with minute, many-tinted blossoms the springy sward that struggles with furze, heather and bracken for mastery of the windswept steeps.

But crowded as is the stunted plant life on the upper slopes, it is arrested at the brow of the grim undercliff which, summer and winter, knows no respite from the waves. Ages of

resistance to the unceasing warfare of the Atlantic have left this firmly-based bulwark hollowed with zawn and cave, gloomy retreats where the seal and the otter find lodging for themselves and a nursery for their young, while on the upper cliff, which only foam and spray can reach, badger and fox have earths and setts or equally secure holts beneath the boulders.

These creatures are not all strictly nocturnal, for though badger, otter and fox are as unwilling to expose themselves as only outlaws can be, the seals may now and then be seen fishing alone or in company with their young at the foot of the cliffs. There are few pictures of English wild life more likely to appeal to the lover of nature than that formed by these glistening black creatures and their cream-coloured young swimming in the sapphire waters on which, from the dizzy height above, puffin and guillemot look like specks. Reckless as the seals appear to be of showing by day, they yet keep a sharp look-out on the cliffs and are quick at discerning danger. To get a better view of any doubtful object they raise themselves so much that their flippers are visible and regard it steadily with their large, soft eyes. If their suspicions are confirmed they quietly sink out of sight. At the crack of a rifle they dive with the quickness of lightning, making the water boil with the energy of their movements. Should they take shelter in the cliffs not another glimpse of them will be got, but if they escape towards the offing, they may after a long interval be seen to rise at a considerable distance out to sea.

Generally they show little fear of the crabbers abroad at dawn; indeed they will often follow them as they row from one string of pots to another and watch the operation of hauling. I say generally, for there are times when the men, provoked by the damage done to net and trammel, attack the seals in their dens and make the survivors for weeks after as shy as otters. These raids are possible only during a spell of very fine weather, for it is necessary that the sea should be smooth, and that the unceasing swell from the Altantic should be at its gentlest. The conditions being favourable, the hour of low springtide is chosen to allow the attack to be delivered and a retreat made before the rising water shuts off the way of escape. Consequently from the moment the boat enters the cave, the utmost expedition is employed in threading the often low, pitch dark passage leading to the seals' lair. The

length of some of these tunnels is truly astonishing. The well-known seal hole between Boscastle and Cambeak Head, for instance, penetrates not less than three hundred yards into the land, yet is so narrow here and there that care and skill are needed to prevent the boat from being dashed against the walls and in places against the descending roof by the ground-swell which always rages in these confined and resounding recesses. The difficulties of the raiders are increased by the foulness of the air, which often makes it almost impossible to keep the torches alight: at times the attack is abandoned on this account. If all goes well and the seals are reached, a savage fray ensues in which one or more of the creatures may fall victims, though not infrequently all escape.

The relations between man and amphibian exhibit however at times an aspect as humane as the raid is barbarous. On one of these expeditions a young seal was captured and taken home by a Boscastle fisherman. It was his intention to rear and make a pet of it. The following day, to everybody's surprise, a seal was observed to come into the little harbour and remain there until the ebb of the tide compelled it to withdraw. It came the next day and the day after, and at length the thought struck the fisherman that the bold visitor could be none other than the mother of the baby seal that shared his home. Touched by the daring of her maternal affection he restored the captive, fond though he had grown of it, and the visits of the parent seal at once ceased.

Seals meet their death not only at the hand of man, but, hard as it is to believe, also by the action of the elements in which they live. This happens when sudden storms surprise them in the caves and beat their life out before they can escape; consequently they abandon the cliff-haunts at the approach of bad weather and keep to the offing.

Their attachment to the wind-and-wave-beaten north coast is not a little strange, but the reason for the limitation of their habitat is probably to be found in the seclusion of that coast, the inaccessibility of the caves, and perhaps partly to the presence in the adjacent waters of the herring on which the seal largely feeds during the winter months. We have a few records which go to prove that the creature has long frequented this particular shore. Borlase, vicar of Pendeen in the eighteenth century, tells of its being there in his time; so does Ray, who calls it, as it is commonly called to

this day by the coast-dwellers, the "soile." Ray is sometimes spoken of as the father of English Natural History, yet his testimony, though two and a half centuries old, seems but of yesterday in comparison with those remote days from which we have inherited the legends of the mermaids about the coast. These weird romances afford strong evidence that seals have frequented the strands of Padstow and of Zennor from time immemorial. Zennor boasts a unique record in the representation of the animal on the end of one of the benches in its church, but whether the carver was inspired by legend or love of natural history must remain as much a matter of conjecture as is the date when the work was executed.

The mention of Zennor Church recalls the opinion entertained by the coast folk that the seals are attracted out of their caves by the ringing of the bells. However that may be, it is an undoubted fact that the creatures are more in evidence on Sundays than on work days; and after all there is nothing very improbable in the widespread belief, for it is generally conceded that seals are influenced by musical sounds. The fishermen invariably whistle to them when they wish them to follow the boats, and it is now a tradition that the singing of Johnny Trehair, whose fine tenor voice acted like a spell on the miners, never failed to draw round him the seals that frequented the Three Stone Oar. The seals themselves are silent by day, but at night their hoarse cries no less than their splashings prove unnerving to the fisher-boys on watch and serve to keep alive the superstitions which yet linger along the wild north coast of the Duchy.

From the seal we pass to its fellow-fisher and neighbour of the undercliff, the otter, a creature which though present in considerable numbers round the coast, is nevertheless but seldom seen. Of all our wildlings, save perhaps the badger, it is the most chary of exposing itself to observation. Yet much as the otter shrinks from the light of the sun, he loves to bask in its rays where he thinks no eye can descry him, on a rock at the foot of the cliffs, or a boulder of the moorland stream. He will on occasion exhibit a greater daring and fish at noonday; but this happens only in very retired situations. Yet so greatly does he enjoy the stolen hours, so natural a part of the wild setting does he form, as to compel the belief that persecution alone and not his own instincts has driven him among the ranks of nocturnal creatures.

Be that as it may, it is between sundown and sunrise that the shy beast wherever found forgets his terror and lives the free and unrestrained life denied him by day. Sallying from some holt he starts in the direction of the morrow's hover, fishing as he goes. Hunger and lust of pursuit appeased he will, if time allows, seek a way of indulging the more sportive side of his nature. Failing more alluring means of diversion he makes a playfellow of the waves, romping with them until he tires. The love of sliding is in his blood, and if a smooth slab invites he will spend hours in gliding down the slippery face to the foam at its base, or if he finds a suitable rock such as the Otter Rock at Looe, he will spreadeagle himself on the surface and allow the heave of the swell to lift him over its crest into the troubled waters on its far side. He generally passes in play of this sort the watch before dawn.

If in search of a mate, however, he quests little and frolics not at all, but urged by his passion journeys on and on along the cliffs, arresting his steps on reef or headland to sound his long, shrill call and listen for the reply. Above the murmur of the surf the high-pitched note will be audible to his keen ears, though it come from far along the coast.

However the night be spent the otter is rarely oblivious of the approach of day. No sooner do the cormorants begin to wing their way past in the dusky light than he makes for the hover of his choice and seeks its driest recess. So he will pass from one sleeping-place to another, now to an "otter's zawn" or "otter's ogo" as the crabbers of the Land's End and Lizard respectively call the small caves frequented by the tribe, now to a mere crevice above high-water mark, now to a clitter of rocks that low springtide does not leave entirely dry.

But all the days and nights of a cliff-reared otter are by no means spent along the coast. There is nothing he likes better than to make his way up river or stream in quest of eels or in pursuit of salmon and peal which floods have attracted to the spawning beds. In his upwater journey he will keep to the line followed by generations of his kind; he will take the chords of the bends, cross at the usual places, land on the favourite sand-spits and mid-stream rocks, and in passing from one tributary to another traverse the intervening hills along the laid trails. Every hover about the watershed is known to the wandering marauder, and like an embodied spirit of unrest he passes, under cover of night, from one to

another. To-day he will doze away the hours in a forgotten culvert of the mill a couple of miles from the cove; to-morrow, after traversing as many leagues, he will be ensconced at cock-crow in the reedy bog where the stream rises, his presence known only to the curlew that shares the solitude of the upland. The water-bailiffs of the Looe and Fowey hold that the otters reared in the well-known cliff strongholds near Polperro "work up" the Looe River, a distance of about fifteen miles, cross the four miles of farmland to the Fowey, and after journeying some twelve miles upstream to the moorland reach near Brown Willy, return along the twenty miles of river to the tidal waters at Lostwithiel, and regain by way of the estuary and the coast the caves and rockpiles of Porthnadler Bay whence they set out on their long round.

It is impossible to say how many weeks are occupied in making the wide circuit or even to estimate the full distance covered, because it is more than likely that every tributary stream, even every pool, marsh, pond and reservoir within reach is visited by the nomad who doubtless lingers or hurries on according to the state of the water, the security or insecurity of the holts, and not least the abundance or scarcity of prey.

In like manner the areas frequented by otters littered in the numerous strongholds around the coast might be roughly mapped out and the county divided into beats which are as old as the hills and as little subject to change, unless poisoned water from the mines depletes the streams or a fish preserve is created where none existed before.

In time of storm, otters driven from the cliffs take refuge inland, and it is then that their tracks are oftenest found. I have frequently happened on them at these times, but in all my searches along the Cornish coast I have nowhere seen so many traces as in a muddy adit near the foot of the Trevalga cliffs between Boscastle and Tintagel. The footprints on the floor of this antechamber to the old mine-workings are of all ages and in all stages of obliteration, forming as strange and irregular a pattern as can anywhere be found.

The polecat, which is closely allied to the otter and betrays its relationship by its love of eels and frogs, is a denizen of the upper cliff, where it hides in crevices of cairns or holts beneath the radgels as the piles of boulders are sometimes called. This ferocious and blood-thirsty creature has many enemies, for not only is every

coast-dweller from the farmer to the rabbit-trapper bent on its destruction, but, if report be true, the fox also is its sworn foe. Occasionally it even falls a victim to the bigger predatory birds, as the following incident shows.

Some two years ago on the Tintagel cliffs, a shepherd saw " high by day " a buzzard rise with something in its claws. It was evident to him that a struggle was going on between the captor and the quarry, but what quarry it was he could not imagine. Whilst he watched, the big wings collapsed and the bird fell like a stone to the ground. The man hurried to the rock where it lay, and there by the side of the dying buzzard was the body of a polecat.

It need not excite surprise that the fitcher, as the Cornish folk call the polecat, should have been abroad at noon, for though usually one of the shyest of mammals, it apparently becomes, when excited by pursuit, indifferent to the peril of exposing itself. For instance, when hot on the trail of a rabbit it has been hunting in the tunnels of a warren, the creature will not hesitate though the sun is overhead to follow the prey to the middle of a field that offers no means of concealment. If driven from the kill, it will return the moment the coast seems clear. Again, when in search of a mate the polecat does not, in secluded places like the cliffs, shrink from prosecuting its quest even by day.

As long as it is able to keep to hidden ledges it is safe enough, but where deep indentations of the coast meet the cultivated land and there is no selvage of waste ground, the animal can hardly avoid showing itself. On viewing the dark brown "varmint" as it steals along the foot of a wall or bounds across a gap a farm hand at once raises hue and cry and with the help of dogs tries to destroy the hated devastator of the warren and the hen-roost. If, as is generally the case, it is found impossible to dislodge the creature from its refuge, a freshly killed rabbit is dragged about the spot and suspended above a steel trap set on the trail. In trying to reach the bait the polecat is nearly sure to be caught.

It is already so scarce that one cannot but fear it will become extinct, like the marten cat which survived until September, 1878.

Mercilessly persecuted though it is, no such fate threatens the stoat, which may frequently be seen on the cliffs. A wondrous sight is the progress of the mother stoat followed by her long train of kittens. This family party as it threads its swift way along the narrow

ledges has no equal for graceful movement. The elfish creatures seem to be as intelligent as they are lithe and active. Conscious of their inability to pull down a hare singly, they will band and hunt in a pack, and the silence of the lonely uplands must often be broken by their shrill yelpings as they follow with an accuracy no hounds can rival the line of their terror-stricken quarry. Their night's work over, they will, like brigands after a "blood" raid, steal back to their fastness in the cliffs, where whilst man is abroad they sleep off the weariness of long pursuit and plan another expedition.

Whether the stoat returns home before or after the polecat it is impossible to say, but it may with confidence be asserted that the badger will be ensconced for the day before either of them. So fearful of being seen and taken is this slow-footed creature, that before the stars have quite faded he will give up foraging and make off over the grass lands at his best pace. On reaching the cliffs he threads the paths between the bushes dotting the crest, shuffles down the zigzag track worn by his own pads to the "earth," and disappears from view. Another badger may follow, and perhaps a third, and then there will be a long interval before the remaining frequenter of the sett, who is given to sleeping out at times, puts in an appearance. It is grey dawn by this and objects that have been distinguishable only by differences of shade are beginning to assume their familiar hues. And now the sea-birds on the islands below add their clamour to the ceaseless roar of the sea. It is during a lull of their greeting to the day that the laggard of the cliff folk comes over the brow and checks his steps by the old cromlech to reconnoitre. His long pointed muzzle and pricked ears show between the lichened pillar and the blossoming furze; his yellow eyes gleam like the dewdrops jewelling the bents. His senses tell him that all is well, and leaving his shelter he descends towards the sett. What a beauty he looks as he trots down the slope! Attracted by the croaking of a raven he advances to the verge of the cliff, shifting however at once his gaze from the noisy bird to a seal amidst the foam that wreaths the purple-shadowed waters. Then he whips round, whisks his brush, and with characteristic impudence goes to ground in the mansion that others have excavated.

XXVII

BUTTERFLIES IN BED

"On the Infinitely Little."

THE grassy, heathery clearing in the Surrey birch wood has been the playground of butterflies for weeks past. A few battered meadow-brown butterflies of July, their poor wings worn as jagged as those of the comma, linger on, but their junketings are nearly over. The Ringlet and the Large Heath butterflies succeeded them before the end of the month, and occupy the bramble-bushes by day and night. Last year, though I pryed closely in their woodland haunts in another district—among hazel, oak, and brake fern—I could find very few Large Heath butterflies settled for the night. Lately I have discovered many on the bramble-bushes in the birch wood. Like Meadow Brown, Grayling, and other butterflies, the Large Heath, settling for the evening and night, always draws down its folded upper wings, so that the conspicuous spot or eye on the back of them is hid. One effect of this is to make the Large Heath a trifle obscurer at rest on the bramble leaf than it would be with the wing up.

But I do not believe the real explanation or object of this withdrawal of the "eye" from public view is protection of the butterfly from enemies of prey by inconspicuity, or by assimilation to surroundings (gross words to use of a sylph like the Large Heath ! but I know not how to avoid them here). My notion is that there is no night enemy that need be cheated—if it could be cheated thus. Protection of butterfly beauty against weather—this, I think, is the meaning of the withdrawn "eye." I admit that, if you set out to look for butterflies at rest and matching their environment, you will find them. The Small Skipper butterfly sleeping on the spear-thistle looked greeny-grey, I noticed, matching his perch. We watched a Meadow Brown, disturbed by large raindrops, perch on a birch twig, and put away his "eye," and we agreed he would pass for a dead leaf. But other Small Skippers, small and large kinds, slept on seeding grass heads and the matching was not close ; and, after all, is a Meadow Brown so very like a dead birch leaf when you come to think of it ?

More striking was the case of the Golden Y moth, the pretty insect which

is out in moist places in the birch wood, and flies often by day. I watched one settle on the trunk of a birch tree. It has some dark fluff or fur, that stands out like a hump or excrescence on the back, which really does remind one of the dark, rough cork of the birch trunk near the ground. If this were the usual resting-place of Golden Y, it would seem very like a matching precaution; but there is no evidence to speak of that Golden Y moths prefer for sleeping quarters the rough, corky trunk of the birches; I think my moth settled thereon by chance. I found him first amid the copse grasses and cross-leaved heather, and I found another Golden Y moth next day resting off the birch trunk in the undercover of the wood.

In the lane end are still a few Silver-spotted Blue butterflies, sucking the bird's-foot trefoil and the bramble-blossoms: a month ago there were dozens. The Silver-spotted, with lilac-blue wings and their clear fringe of white, is quite as lovely a little flyer as the Common Blue butterfly; indeed, in minutiæ—and perhaps because he is not so common!—I think him the choicer of the two. Of the sleeping quarters and habits of this gay beauty I know little yet; one or two I found at rest slept head upward, not like the Common Blue their near relative head downward; but perhaps this was exceptional, due to some chance disturbance — I can hardly imagine the sleeping habits of the Common Blue differ from those of his first cousin.

Nobody could doubt that to watch butterflies and moths is to train the eye to beauty on a scale of exquisite, if tiny, perfection; this is absolutely plain to every seeing, thinking man. But a study of the habits, minutiæ of minutiæ, of such little things—how can this avail human beings? it may be asked. Is not the man who does it rather like Browning's grammarian, who fiddled away his life on Greek enclitics and particles, holding forth on them till he was dead from his feet to his waist? Would it not be wiser to aim at the million and chance missing the unit? Yes, but in these units secrets of life—secrets of whence, whither, why—are concentrated. In the end we may know ourselves through a blue butterfly. Only we must watch and record, utterly careless of any theory; if this butterfly's nightdress does not mimic its surroundings, we must accept the fact, careless of theory. Theory is a feather-weight set in the scale against truth, a matter of supreme unconcern.

SILVER-WASHED FRITILLARY.

From a photograph by
Reginald B. Lodge.

XXVIII

SEA BIRDS

"Between the waves and black o'erhanging cliffs,
Where, in and out, the screaming sea-fowl cry."
—Matthew Arnold.

FROM the window at which I write, I can see the gulls scouting over the pastureland. I can hear the harsh "crow" mingling with the subdued cry of lapwings. Any day, all winter through, they are somewhere about. Yet it is nearly ten miles from the coast. One wonders whether they are marine forms which drift to the country, or inland forms which spend some of their time at sea. The webbed feet and toning of the plumage mark them off from the birds with which they pass the day, and seem to favour a marine origin. But these do not necessarily mean more, or date further back, than the habits.

To lake and marsh, still further inland, and by the base of the hills, they go in the spring to breed. There the young are born, and pass their childhood: are natives of the scene. Only after weeks are they guided to the sea, as to a strange place. In other forms which lead a double life, we look to the breeding scene to tell which of the two spheres owns them. Where were you born or brought up? If there is any force in the enquiry, then the origin of the gull may be inland.

From the forms so familiar to the peasant, to those only known to the fisherman, are gradations. A change of habit is often accompanied by physical adaptations to the mode of living. The hind toe—of use in walking, but only a hindrance in swimming—may be more or less aborted. But the biding nearer the coast does not make sea birds, in the sense in which other forms we shall come to by-and-by, are sea birds.

The webbing of the feet, which does not help them on the land, only makes them a little more graceful on the water. All the swimming they really need might be done without. They float perfectly, and might fitly be called the floating birds. The modification of the hind toe does not help them under water. They do not dive; and diving, in one form or another, is needful to the making of a sea bird. These adaptations, significant as they are, fail in the main end: they do not send them down to the fishes which swim below.

There are chances of which the gull knows how to avail itself. Some commotion is going on in the depths, an enemy is at work among the shoals. The scared fish seek the surface, in a wild rush for life: even leap from the water. But a chance meal does not make a living, nor does the scene of chance meals make a living place. Between the chances, are intervals long enough to clear every gull from the face of the waters.

In lavish moods, the sea is sovereign in her gifts. Her storms are magnificent, alike in their destruction and their bounty. What they tear from the depths they toss to the haunters of the shallows and the shore. She scatters over the sand banks, she piles up along high-water mark. But storms are episodes, impulses; far separated by placid intervals, when the wavelets simply lap, bearing nothing in. Gulls wait upon the moods of the sea. And in repeated trumpet notes, tell their fierce joy. In the main, they scan a barren shore, and turn empty away.

The most familiar is the black-headed gull, partly because it is the pertest. It passes through the most striking seasonal change. In spring it puts on a black or brown head, and puts it off again in autumn. It dons it, not all at once, but lingers over the process. It runs a dark line over the crown, to define the area to be coloured, and proceeds to fill in, down to the base of the coral bill. It is a mistake to say that it does not readily take to the water.

At flood it rides in the shallows, sitting high as a cork, and bobbing lightly over the ripples. It is a floating bird. Of all gulls it is perhaps the furthest from diving. So loose and slight is its grip of keel, that no one could imagine how it could get under water. It is most at home on the banks of the ebb, paddling about on its red stilts with quick, short, mincing steps. It is a walking gull. Nor does the webbing of the feet make it awkward. And, being preternaturally sharp, it can pick up what is brought in on the wash of breaking waves.

Five hundred feet above the surf, in Shetland, I have watched the kittiwakes swimming below. Every ledge between seemed crowded with their young, in immature plumage, with the charming crescent of black round the neck. Lower set, and short-toed, they are at the opposite extreme from the upright black-head. They are swimming not walking birds. So it was in the summer. In winter I

have seen them from Ventnor in the Isle of Wight. Swimmers though they were, they could get nothing from the Channel of all it contained, save what it chose to cast ashore. I have a vivid mental picture of a group of about a score, flying greedily around something that had floated out into the water.

More attractive, by reason of the purity of plumage, the uprightness of gait, and the bold, trumpet-like music of its repeated call, is the herring gull. Moving, with slow and stately steps of the flesh-coloured legs, by the water edge, it forms a background to the lesser gulls on the banks. The serried ranks mock the lines of breaking waves. The making tide floats them. Deeper and further out they sit on the flood; only to pass the time till the ebb, and the return to the shore.

The line which marks off certain great gulls, the most wonderful of our native sea-fowl, is drawn sharply between the lesser and greater blackbacks. The giants include the glaucous, and Iceland gulls. To the north they increase in number. In Shetland, they are regular winter visitors. Toward the arctic circle they thin out, and give place to the great white gull of the ice floes. These forms approach the shore by the mouths of estuaries. In grace and power of motion they excel. Their empire is the wing: theirs is the very poetry of flight. They are tireless. In the distances they range over, in the vast areas they scan by the way, something is sure to float or be stranded. On that they wait. They see the glitter of the shoals beneath the surface—myriads on myriads, and pass by. They are sea birds in so far as they are found by the sea, wear the livery of the sea, and have sea cries. Yet in all the æons they have been there, long enough to borrow marine hues and conquer the buffeting winds, they have never acquired the simple arts of getting a living from the sea.

Terns are sufficiently near in toning to be confused by the unobservant with gulls. They wear a black cap on the very crown of the head. They come about the end of April, and leave toward the end of September. They are scattered along our summer coasts, thinly, and yet without a break. Each pair seems to have its beat marked off by invisible boundaries. At either edge one beat touches on another, in a long, bright, quivering line.

Short and weak in the legs, they come nearest to the kittiwakes. They are not walkers. Yet they are not

swimmers. They do not often light on the water. Sometimes, at high tide, they may drop for a little; but not to float lightly, nor paddle about. They rest on a bank at the ebb. Nor do they often rest; but when they do, they rest absolutely. They are utterly quiescent. They squat low and look dumpy, as though leaning on their breasts. Tail and wings trail on the wet sand. They rise, and are no longer mean. Their legs are weak because they live in the air. They are fashioned for flight. Even then, they do not rival the great flyers. They do not float and tack and steer as the gulls do. There is none of the absence of effort, the easy command of every movement, the reserve, the slow play, the calm sense of power. There is a want of symmetry in their form, of proportion in their parts; neither smoothness nor balance. But they get along: there is swiftness. A tern on the wing, and on the sand are two extremes—motion, and rest incarnate.

On the bents the other day, I picked up a dead bird. As I look at it now, I see how everything has been sacrificed to speed. The fragile body is little more than a connecting link. I pull out the wings, joint by joint; they stretch to a great length. So much is there of them, and so little is left. The tail is a charming object. The outer feathers on either side extend far beyond the rest. The depth and delicacy of the fork tell of the lesser tern.

A very intense speck is the bird in the air, a concentrated ray of light. In flight it strains: in poise it quivers. Its scream is charged with fretful impatience. So keen is it, that, in comparison among seaside sounds, that of the redshank seems to lose its edge. No bird I can think of is so highly strung. It has none of the placid mood, the happy-go-lucky temper of the gull. It does not take life easily. This may account for much.

No waiter on providence, or on the sea, is the tern. It is too restless for that. Impatience lends it resource. It makes a bid for its own living. When the sheen appears below, it does not pass over. It pauses. It searches the barren places that it may find. Under a like disability with the gulls, it will not be denied quietly. To its quicker wit, a middle way appears, between scanning the surface for a floating object and reaching the tenants of the depths. Its kingdom is the shallows. It quivers, it focuses, it screams, it dashes down. Head first

it goes. The impetus is sufficient to carry it a foot or two beneath the surface, deep as the glittering ranks of sand-eels.

By this simple device—which the gull must have watched a thousand times as he passed by on his vain search—the tern gets its living at the sea. Not a chance diet, but food when it is hungry. There are limitations. The water must be clear, and the surface undisturbed, save by the play of ripples, else the keen glance may not see what is beneath. So far is there an element of chance, and seasons of dearth; days when the fisher is absent from its beat. The tern searches the shallows along the margin, only a few yards from where the wavelets lap upon the sand, and the black-headed gull picks up the stranded shrimp. In like manner, it is just on the edge of seabird life.

So fishes another and much larger bird. The empire of the solan goose is out in the deeper water. It passes over like the gulls; but unlike the gulls, it looks below the surface. It is heavy in the air—lacks the buoyancy, which may be one reason why the gull does not try to dive. It wheels on its course, dashes down, and vanishes. It goes deeper than the tern, but no deeper than the dive will carry. In this somewhat sensational way, which arrests and fascinates each time one looks on, it commands the upper depths. Its weight carries it some ten to twenty feet. A lighter bird, the tern splashes barely over head: in its buoyancy it is allied to the gulls. The solan goose belongs to a fishing family. Its nearest relatives are truly marine birds. Its mode of diving is somewhat puzzling. It is an interesting connecting link.

XXIX

THE BRITISH FERNS

"Ferns, . . . noxious weeds, to be classed with thorns and briers, and other ditch trumpery."—UNENLIGHTENED OLD AUTHOR.

THE very word *ferns* bears with it something of an early Victorian impression, and a "rage" or fashion in ferns, long since dead, but of late years in part revivified by the popular leaning towards the "wild" type of garden, was responsible for much of their abundant literature. But who ever looks into the large, handsomely illustrated volumes issued

at that time, nowadays? Although the delight of the enthusiast, these formidable tomes are far too technical for most of us. We must own to a considerable sympathy with the plant-lover as totally distinct from the systematic botanist. Some years ago there appeared a book about ferns (*The Fern Paradise*, by F. G. Heath), written in quite another manner. The experts shook their heads, and they are still shaking them, but the fact remains that its popularity has been considerable.

It is in our opinion a nice point whether it is strictly right to add to the ravages effected by the plant hawker in even the smallest degree, but, undoubtedly, our native ferns offer a rich field for the collector. This is not only because the number of distinct species (forty-five) is fairly large, but is in a greater degree occasioned by the truly remarkable tendency to sport, and afford well-defined distinct varieties which ferns exhibit both under natural and cultivated conditions. At a moderate estimate there are nearly 2,000 generally accepted varieties of the British ferns, and while many of these have been raised from spores, a considerable number have been discovered growing wild. So long as ferns grow in a wild state will the chance of discovering striking new forms exist, and it is this ever-present possibility which forms their great fascination for the collector. In the case of, let us say, butterflies' or birds' eggs it may not take very long entirely to exhaust the collecting possibilities of a district. With ferns, however, it is very different, they are provokingly shy of discovery, and however thoroughly the hunting-grounds may be ransacked one year, the hope still remains of there being interesting varietal novelties among the next year's crop. Some ferns are vastly more prone to variation than are others. For example, while in text-books to the description of the Alpine and mountain bladder ferns, the woodsias and others the simple statement "no varieties are recorded" is appended, the description of the four hundred or so varieties of the hart's tongue fern (*Scolopendrium vulgare*), which having in the type form a single undivided frond would not be thought to offer much scope for variation, occupies many pages. The main types of variation in the British species are: (1) *Crestation*, a multiplication of some or all of the extremities of the fronds and their subdivisions; (2) *Plumation*, a remarkably delicate division and growth of the ultimate sections of the frond, or a greater foliaceous

development; and (3) *Congestation*, which is usually present in conjunction with dwarfing, all the parts of the frond being closely pressed together and overlapping. Two or more of these main types of variation may be present in the same plant, while the number of minor forms may well be termed infinite. In fact, the possibilities of variation in ferns are so considerable as to be comparable to the diversities of combination which may occur in ladies' hats, or even in the game of chess. Some faint idea of the number of forms it is possible for a fern to assume will be afforded by our stating that for reasons of classification it has been found expedient to sub-divide the varieties of *Scolopendrium vulgare* as follows:—

Branched.
Unequally branched.
Conglomerated.
Crested.
Flexuose.
Marginate.
Margin-altered.
Muricate.
Narrowed.
Plumose.
Pouch-bearing.
Sagittate.
Supralineate.
Truncate.
Undulate.
Variegated.

After this it would seem almost superfluous to state that the nomenclature of the British ferns is a thing which it is pleasantest to marvel at from a distance. The amateurs and cultivators who have discovered or raised many of the varieties have also furnished them with Latin names, which are the despair not only of the average man, but of the botanist. Is it not a peculiarly barbarous proceeding to inflict upon an inoffensive plant such a title as *Aspidium angulare var. polydactylum multifidum grandiceps*, and that with the truly bathetic termination, *Jones*? But, certainly, where there is such infinite variety the problem of nomenclature is a difficult one.

Coupled with the information that a good many energetic people have devoted a great part of their lives to the British ferns, and that the botany of ferns is most vexatiously complex, what we have said should suffice to convey to the uninitiated the knowledge that the British ferns are by no means a superlatively simple subject. But, fortunately, it is possible to derive a great deal of pleasure from them without delving deep into technicalities, or, indeed, the exercise of any exertion beyond that of looking about one when in the country. By reason of their climatic conditions the Lake District and Devonshire are the great English fern strongholds. Is not the very thought of Devonshire suggestive of deep-set lanes charmingly decked out with ferns, of ferns on banks, on roofs, and on walls, indeed, of a fern paradise —and what more beautiful than this?

In the space at command it is not possible to enter into detail even to the extent of briefly indicating the individual characters of the various British ferns. From the giant royal fern to the little native maidenhair or inconspicuous adder's tongue they are all dear to the enthusiast, and in the majority of instances his enthusiasm is not misplaced. Their distribution in Great Britain is very varied, some species being exceedingly rare and confined to a few localities, while others are common almost everywhere. Many of them are widely distributed in other countries, for example, the Tunbridge filmy fern is a native of France, Germany, Italy, Belgium, Holland, Norway, Sweden, the Azores, Madeira, India, Mauritius, Chili, Brazil, Australia, New Zealand and the Cape of Good Hope, while there are few plants of any description more ubiquitous than is the common brake fern.

In addition to their mournfully apparent use in materially contributing to the support of the country-side "moucher," the British ferns are possessed of certain other economic values. For example, the fronds of the brake fern have so many uses that their harvesting is quite an industry, and the fronds of the brake and male ferns used to be burnt together for the sake of the ashes, which were used by soap makers and glass makers. Medicinal virtues, generally as vermifuges, are also attributed to several ferns. Various fern preparations hold a place in rural medicine, and the root of *Athyrium Filix-foemina* is reputed to have formed the chief part of "Madame Nouffer's celebrated remedy for the tape-worm." Yet another curious use for a fern is that the spleenwort is used as a bait for rock-cod fishing on the coast of Wales.

The hardy ferns generally, both deciduous and evergreen, are deservous of a more prominent place in the garden than is commonly given to them. Certainly they are grown to a considerable extent. It is a common practice to sally forth on the last day of a country holiday and dig up a basketful of unfortunate ferns which are afterwards stuck in on the shady side of a suburban garden, where they bear their hard lot very bravely; but this is not growing ferns as they should be grown. Although there are sun-loving ferns, the common belief that they are shade-loving plants is in the main a correct one. We consider the ideal position for a collection of the larger ferns to be on a sloping bank, in a dell, which is to some extent overhung by trees. Besides providing shelter, the

annual fall of leaves from the trees will be found of considerable benefit to the ferns. The most valuable of the larger native ferns for garden purposes is the noble royal or flowering fern (*Osmunda regalis*) and its forms. These should be planted in moist, peaty soil, preferably near to water. Under favourable conditions the fronds may attain eight feet in height, and it is most interesting to watch their rapid progress in spring. It is usually thoroughly advisable to go to the trouble of specially providing suitable soil for the fernery. A mixture of loam and peat, with a quantity of crushed stone or brick, will be found the most generally suitable. Many of the smaller ferns, notably the little spleenworts and the small-growing aspleniums, appear to the best advantage when growing on a wall. It may not be very easy to establish them there, but wall gardening is a most interesting form of the gardening art, and, once obtained, the results are remarkably gratifying. Owing, no doubt, to a great extent to their tolerance of neglect, the hardy ferns are largely grown as pot plants in dwelling-houses, and we account this a more satisfactory method of growing them in towns than is their relegation to a heap of brickbats in an obscure corner of the back garden. The practice, interesting at any rate to children, of growing ferns indoors, very often in company with green tree frogs, in the almost air-tight glass boxes known as Wardian cases, bids fair to become extinct. There was this much about it, that the case usually being crammed with ferns, the sight of it afforded an interesting object lesson in the struggle for existence to the thoughtful; but even this merit was apt to be marred by the circumstance that the glass of the case was generally clouded over by condensed moisture.

Anybody who desires to inspect a representative collection of British ferns should journey to the national gardens at Kew. Thanks to an ex-curator of the gardens having been a zealous pteridologist the collection of ferns of all kinds has long been a good one, and consequent upon the bequest of an extensive private collection some years ago, the collection of forms of the British species is an extremely good one.

XXX

PLANT ALIENS

"The noisome weeds, which, without profit, suck
The soil's fertility from wholesome flowers."
—SHAKESPEARE.

PRECISELY what constitutes an alien plant is an unsettled question. Some botanists do not consider a plant necessarily indigenous even if found in deposits of the Glacial Age, much less in those of the Palæolithic or Neolithic period. For our present purpose, let a statute of limitations be passed, so that we may call a plant native if its pedigree can be traced back to pre-Roman days.

Starting from London for a long day's ramble, we will first take a railway journey of about a dozen miles. Our object is to scrutinize closely the antecedents of any suspicious plants, not excluding too rigidly, but paying no heed to the havoc which must be wrought with the "London catalogue." Many casual plants, such as foreign trefoils and pepperworts, may be looked for on the railway banks; obviously these cannot be examined. In the station yard, however, there is a miniature forest of little feather-fruited strangers which might carelessly be passed over as groundsels. Truly, the flower belongs to the Composite order, but the pappi of the head are white, not yellow. This species is the Canadian fleabane, or horse-weed, which came over, so runs the story, in the seventeenth century, a solitary seed having accidentally been packed along with a stuffed bird. Of no great mischief, the horse-weed has nevertheless distributed itself all over the kingdom. The hamlets near the station have suffered invasion from another Composite, the galinsoga, a wanderer from Peru; this species has within fifty years contrived largely to oust from fields and gardens the ubiquitous groundsel. Without leaving the district, one may notice the small-flowered balsam, or spotted touch-me-not, a harmless little intruder, which perhaps arrived as a stowaway with garden seeds.

As we saunter along by the hedgerows of a village built on the London Clay, we are reminded that the rugged elm has been called into court. The accusers state that the common elm never—the indictment is as sweeping as it is hazardous—sets its fruit, hence it is not native. Against the edible chestnut the charge is more serious, though the tree seems to be as old as

the Roman invasion. Tall Lombardy poplars surrounding yonder mansion can produce certificates for one and a half centuries only; the two planes, oriental and occidental, for ever shedding their flaky bark, are alike convicted; the black mulberry, the gloomy cedar, and the delicately-leaved acacia cannot stand a moment's trial. The last named, also called the robinia or locust-tree, was imported to England by William Cobbett, though known here before his time. Cobbett opened a nursery for its propagation; it was to be the tree of the future, a prophecy sadly belied by later history.

Passing the village our way lies for some distance alongside a canal, whose sluggish waters are choked with a matted growth of that troublesome pest, the anacharis, or American water-thyme. Anacharis has limp, straggling stems, belted, at short intervals, with whorls of linear translucent leaves. About the year 1840, in an evil hour, some one appears to have brought specimens of the plant to Britain. Soon a cry arose, the alien was spreading from pond to pond, from artificial lakelet to stream, river, and canal. Its rank abundance actually deluded one authority into the belief that it was indigenous. Apart from propagation by fruit, the plant spread vegetatively; a mere sprig, a bud, would soon establish a colony. A scrap of floating wood carried it here; there it slid down a drain-pipe or crept through a sluice into a canal; yonder a ditch-cleaner, dragging his heavy boots across a field, transported a spray to new waters. Farmers and boating men were compelled to spend thousands of pounds in raking out the intruder from the clogged watercourses. Vain the hope of extermination by such means; the only solace is that the invader may by chance exhaust the muddy soil which lends it support, and thus vanish as secretly as it came.

The canal must presently be left behind, that we may follow the windings of a streamlet whose marshy forelands are clothed with the bright yellow mimulus, known to townsfolk as the monkey musk of the window box. One could readily enumerate half a score of localities where this not unwelcome guest has settled, and the list might be doubled. The mimulus extends itself with remarkable pertinacity; four roots brought by the writer from the margin of the Buckinghamshire Chess now completely border a good-sized garden. A bridge is next reached, crossing which, a footpath leads through a clover field. An alien vetch or trefoil may be catalogued.

Part of the crop indeed consists of the naturalized crimson trifolium, its handsome ruddy spikes overtopping and almost concealing its own threefold leaflets, as well as the verdure of the other legumes. Like the terrible substance which dyed the hands of Macbeth, these flower-heads seem to render—

> The multitudinous seas incarnadine,
> Making the green—one red.

Other exotics of the same order, introduced by human agency, and now, in some districts, practically wildings, are the pink sainfoin and the deep purple medick, or lucerne.

The clovers passed, the path strikes through a field of wheat. The rapidly yellowing grain is studded with the fugacious blossoms of the scarlet poppy. This plant affords a type of denizens of the cornfield usually deemed emigrants. They have great fondness for cultivated crops; cunningly, as it were, they ripen with the corn and so get sown with the corn. The poppy may be of Roman lineage, perhaps also the corn-cockle, whose large purple flowers are flanked by five long, outstanding sepals. Being an annual, this beautiful flower may be banished from a field in a year, but it will reappear in remarkable profusion elsewhere. Other plants which hide among the grain are the corn crowfoot, whose prickly fruit forms the "hedgehogs" of the schoolboy, the umbelliferous corn-parsley, one or two species of campions and knobby knapweeds, and the charming little pheasant's eye. Common report allows England only two scarlet wild flowers, the poppy and the pimpernel, but this autumnal "adonis" is a third. Three years ago a field below the entrenchments of Old Sarum was largely tenanted by this little pilgrim. Like their human counterparts, such fugitives conceal themselves where most protected. Reared often in warmer climes, they suffer from competition with our hardy natives. Remove the defence afforded by the tall corn, and the precarious roothold is of naught.

We next examine the refuse heap of a farmyard. Among the dust, burnt clay and brickbats, we may look for an alien lepidium known to be partial to such spots. Should there be an admixture of manure in the heap, the thorn apple, or datura, a native of the United States, will perhaps be noted. Its large green fruit capsules are densely clad with stout spines; the bell-shaped flower is of a pale mauve tint. Reputed to be poisonous, it may be spared, because it has medicinal uses; besides, it is never abundant in our country.

HAYMAKING.

From a photograph by
Graystone Bird.

In France the writer has seen a whole field given over to the mercies of this weed. Several other casuals owe their introduction, or at least preservation, to the needs of the pharmacopœia; the marsh mallow is an example. Reverting for a moment to the rubbish heap, we notice that these ruderal plants are very delicate and very exacting in their requirements. They constantly need a fresh habitat. Unless the dust mound be occasionally turned over, or a new one started, the ripened seeds are vanquished by the rivalry of our native denizens of waste places.

By the garden bank is a wide carpet of the large heart-shaped leaves of the winter heliotrope, or sweet-scented butterbur, a continental species. Strangely enough, few people know this common plant; if noticed at all, it is passed over as coltsfoot on account of its leaves. The fact is, the fragrant panicles of lilac blossoms appear in mid-winter, and the careless observer misses these at the time. In situations similar to that of the butterbur one frequently finds the lowly claytonia, a quaint, fleshy-looking little plant, with its stalk stopped by a circular leaf, slightly beaked, above which is the peduncle carrying minute white flowers. A century ago the claytonia was unknown in England, now it is recorded from a host of places. It soon establishes itself, and drapes many a hedgebank with a glossy mantle. On our ramble we shall certainly see, bordering many cottage gardens, the American snowberry and the alien "tea-plant," in a semi-wild state.

Our list includes not a moiety, yea, not a tithe of the alien groups, if we add those herbs and vegetables which are deserters from the garden. As a set-off, we might enumerate certain plants which the botanist affirms were original y wild and free, but which have now crept down for protection to the cultivated areas. The lily of the valley and the edible strawberry may serve as examples. Balancing gain and loss, too, it is but just to remember that we have carried our chickweed, our shepherd's purse, thistle, dock and watercress to distant colonies, where, in turn, they are undesirable aliens.

XXXI

ENGLISH SNAKES

> "It is the bright day that brings forth the adder,
> And that craves wary walking."
>
> —SHAKESPEARE.

IT has often been remarked that the student of the fauna and flora of the British Isles will find something to interest him in almost every branch of these divisions of living things, something at least representative of the greater luxuriance of animal and vegetable forms to be found elsewhere, if not on the same grand scale of production or occurrence. The remark is a perfectly true one, and it applies to the observation and study of snakes no less than to the thousand and one other biological groups which the student of wild nature loves to contemplate. To those of us who have lived in lands where species of serpents outnumber the British list by hundreds, and where the size of these reptiles is estimated in feet rather than inches, it might appear that English snakes present but tame and uninteresting objects of study, but such is by no means the case. The fascination of studying the life-histories of animals does not depend upon the number of individuals encountered, still less upon their size. True, the element of danger adds a zest to some forms of hunting, and this element is perhaps at a minimum in snake-hunting in England; but even in these isles there are places and snakes which, as Brutus said, crave wary walking, though the charm of a stroll through English lanes and woods is not materially diminished thereby.

A great number of the inhabitants of England have never seen a snake, perhaps even the majority have not, except in a cage. And yet it is a simple fact that there is not a single county in England, Scotland, or Wales, in which snakes do not occur, and these venomous. There are counties in which the adder or viper, the only venomous snake we have, occurs in its thousands, and yet is seen by very few persons and then but rarely. Why is this? Simply because where men are many there snakes are few; and secondly because of all creatures few are so absolutely unobtrusive as are snakes of the varieties found in England. Let me mention an incident to illustrate this. Some years ago I was investigating the snakes in a certain district, and I was advised to apply to the local

clergyman for information, as he was a keen student of wild life. I found in him an excellent ornithologist, but on inquiring about the local reptiles he told me he had seen very few in the immediate neighbourhood during the forty years he had lived there, and none at all just round his own house. He was considerably astonished when, within a few days, I caught two large adders in his own garden, which was quite close to a large wood, and very interested when on uplifting a flat tombstone in his village churchyard, we discovered a flourishing colony of slow-worms or blind-worms. The truth was simply that he had never looked for the snakes, and they always kept carefully out of his way. It is astonishing how difficult it is to see an adder which is lying motionless amongst a mass of dead leaves or bracken, or a slow-worm curled up in grass. In both cases the protective colouration effectually screens the reptile from observation, until it moves, and in the case of the slow-worm one may pass within a yard of the creature and it will lie absolutely still. Frequently the first indication of the immediate presence of an adder is the long-drawn-out hissing which warns one to stop and look carefully where one is about to tread.

If the reader will follow me in imagination on one or two snake-hunting expeditions, he will perhaps gain a better impression of the snake life of our country, than by a formal description.

It is the last week in April, and already in mid-Dorset the warmth is quite sufficient to have attracted the snakes from their winter quarters, from the old quarries, heaps of stone, rabbit holes, and other sheltered spots in which the severe winter weather has been passed. The animal functions of respiration and circulation have gradually regained activity as the days have become warmer, until now such a temperature has been reached as induces the reptile to seek the outer world once more and commence a search for food. The further south one goes the earlier will this season of renewed activity set in, and by the end of April in an ordinary year we shall find the snakes in full enjoyment of the warm sun.

Driving some miles from Sherborne, we cross the site of the once extensive forest of Blackmore, and find ourselves on a chalky soil which is frequently found to be favoured by adders, and making our headquarters in a hamlet nestling in a sequestered vale, we proceed to make inquiries from the local

field natualists and gamekeepers as to the best places for finding and observing snakes. There is no difficulty. The keeper shows us six adders and two harmless ring snakes which had been killed by the beaters in a rabbit shoot a day or two previously. Every villager has a story to tell of the local reptiles, and it is quite evident that they abound in this locality.

Four hours hunting next morning brings its own reward. A ring snake is seen scuttling along the bottom of the ditch by the roadside, within a hundred yards of the village inn. The hedge is thick and the snake moves so rapidly that it is impossible to catch it under such circumstances. Strolling very quietly along the lonely lane we soon encounter an adder curled up on a little grass-covered hillock. The reptile is asleep, basking in the morning sun as is their custom. With great care we are able to approach within a yard of it, to note the graceful attitude, to recognize the brilliant markings which characterize the young male adder in the shape of a dark black zigzag line alone the middle of the back. The soft grass enables us to pick up the reptile in our adder catcher (an instrument something like a pair of tongs) actually before our presence is discovered. Quick as lightning the adder realizes the situation and fixes his two fangs in the rubber-covered blades of the catcher. From each fang there exudes a drop of pale yellowish-green fluid, which is the secretion of the venom gland. Several times he repeats this until satisfied that all attempts to escape are useless, and then our captive settles down into a sullen vindictive sulk. He is now comparatively harmless for a time at least, for having emptied the contents of the venom gland it will take some time before a dangerous dose is again secreted.

We carefully carry the adder securely held in the instrument into the middle of the lane, and there set him free so as to watch his movements in the open. The first thing he does on discovering that he is no longer held by the neck is to disgorge his morning meal, which in this case has evidently consisted of two young field-mice, a favourite article of adder diet. He then glides sullenly and slowly along the lane for a few yards; but on observing that he is kept closely in view, he gathers himself up into a curled heap, his head on the top of the curl, and hisses defiance. An incautious step too close shows that he will fight when cornered, for he strikes like lightning at our ankle, fortunately pro-

tected by thick boot and leggings. Two tiny punctures mark the place where he struck, the whole movement being far too rapid for the eye to follow. Then finding that his attack has not disarmed us, he once more resumes the sulky sullen mood and refuses to budge an inch, merely hissing continuously. Finally we transfer him to a strong vasculum and resume our walk.

A mile or two across hilly fields, in which are numerous chalk pits overgrown with gorse and brambles, and we arrive at the bottom of a wooded hillside, in which we have been informed snakes abound. A number of woodmen are at work here, and they inform us that they have killed three or four per day this last week. This morning's bag is shown hanging from a bough and consists of three adders ranging from eighteen to twenty-two inches in length, and one harmless ring snake, nearly three feet long. One part of the wood, where a lot of trees have been felled and left to dry, is pointed out as especially infested and consequently avoided by the men.

Thither we wend our way and in a few minutes disturb several ring snakes; but all efforts to capture them are unavailing, owing to the amount of brushwood under which they quickly disappear. As usual, the adders are more lethargic, and rarely move until disturbed; but they too are difficult to capture uninjured in this situation. Still in an hour or so we have a fair collection of both species, including one of the rare small red viper, a little red and fiendishly bold imp of a serpent, not more than a foot long, who faces us and fights for all he is worth directly disturbed. It is marvellous to watch the movements of the harmless ring snakes in this thick cover. Though but a yard or so from one's eye when started, it is next to impossible to follow them, and far more are seen than are captured. One wonders what they feed upon here in this dry wood—frogs, their favourite food, are absent and no water is near; probably newts supply their needs. The adders have abundance of food in the mice and slow-worms, which are plentiful. A few days more snake-hunting in this district yields a representative collection of Dorset reptiles, and fairly establishes the claims of that county as one of the richest in England for reptiles.

Two months later, at the end of June, we find ourselves in a lonely valley in South Herefordshire, once more looking for snakes. On our right hand rises Garway Hill, bare in

places, bracken-covered in others, with a wood here and there. On the left the Graig Hill, wooded almost completely. The river Monnow runs between, separating Hereford from Monmouth. A more secluded spot could hardly be found in civilized England. The weather is very hot, and it is the time for the female adders to be basking in the hot afternoon sun, gaining all the additional heat they can for the development of the young within them. We know adders to abound in this valley, but they are hard to find now, because the vegetation is well grown. Long acquaintance with their habits, however, enables us to find some every day and to watch the same females day after day emerging from the same patch of thick fern, gliding very deliberately to the edge of the "rides" cut for shooting purposes, and finally coiling themselves up on the top of an ant heap, there remaining motionless for an hour or two at one time, all unconscious of our patient inspection through field glasses. Hardly a male adder is to be seen; they seem to mysteriously disappear soon after the spring, the truth being that they remain in the thick cover and rarely come out into the open ground. We find the females here much larger than those seen in Dorset, several being measured over twenty-six inches in length. Not a ring snake is seen; there are none in the immediate district, though plenty a few miles further in Monmouthshire. Slow-worms, however, are seen in great numbers, and on turning over one heap of stones we find no less than nine at the bottom, all sizes and ages, from the bright silvery and copper young one of this spring to the grey old grandfather of, perhaps, twenty years ago. On Garway Hill we are shown the carcase of a young bullock which had been bitten by an adder and had died therefrom, the adder being found beside his victim. Dangerous reptiles these large Monnow Valley adders, as we know from some exciting previous experiences. Some of the spots where the females are known to be are marked for later observation and to save time in searching.

During July and August we pursue the wily snake in Wiltshire and Gloucestershire, where we find the ring snake much in evidence, especially in the neighbourhood of ponds, in which they may be seen every morning enjoying a cool swim. There must be thousands of these snakes in these counties. We find their bundles of eggs—for they are oviparous—deposited in manure heaps and in odd corners given over to rubbish, often quite close to dwell-

ings, each cluster of eggs containing from twenty to thirty eggs. Then we pay a flying visit to the Norfolk Broads, and there find only adders again, sunning themselves on the banks or walls of the marshes. Not a ring snake to be seen here, though frogs abound! Such is our experience of Hickling at least and the immediate neighbourhood. A number of fine sloughs are picked up on the marshes, these being cast at intervals of six weeks or so from spring to autumn. Our collection for the four months now approaches a hundred specimens of adders, killed and preserved to study their varying sizes and colour variations, and our records show some three hundred ring snakes measured for their sizes and released as being perfectly harmless and useful.

We finish our season's snake-hunting by a return visit to Hereford in early September, in the hope of encountering some of the females previously marked down, this time with their families. For days we meet with nothing but disappointment. Not one is to be seen, though the old spots are watched by the hour. They must be in the bracken. We have no option but to follow, and as the growth is four or five feet high it is no easy task to force one's way through and at the same time see the reptiles. Moreover the noise made by our movements scares the adders. By sheer good luck, however, we are successful at last, when almost giving up all hope. A large female is observed at a most interesting moment, and later on she and her whole family, consisting of thirteen young adders, measuring from six to seven inches in length at birth, are caught, photographed, and carried home in triumph. One of these youngsters, not more than a few minutes old, struck and used his fangs with all the concentrated viciousness of his race, but his supply of venom being yet small no harm resulted.

So we leave our snakes for another winter's hibernation, well satisfied that there is still plenty to see, study, and observe in our English reptile fauna, before all is known concerning the life-history of these most interesting and unduly despised creatures.

XXXII

THE KITE

> "And other losses do the dames recite,
> Of chick, and duck, and gosling gone astray,
> All falling preys to the fell, swooping kite,
> And on the story runs, morning, noon and night."
> —CLARE (*Village Minstrel*).

IT is rarely that the average, present day ornithologist can boast a real acquaintanceship with the kite. For, from being in mediaeval ages a bird of general occurrence in town and country alike, he may now be safely included in the first six rarest, regular British breeding birds. This unhappy state of affairs has been largely due to the craze for pheasant-worship and to the kite's own detrimental habit of pilfering, which to the henwife has been a constant and terrible source of trial.

The Barcud's [pronounced Barkit], to give the kite one of its Welsh appellations, last stronghold in our Islands is amongst the wild hills of Wales ; in a country which may aptly be described as a vast mountain wilderness relieved from too marked a severity and sameness by numberless romantic "cwms" and dingles—many of them well-wooded, and embracing some of the loveliest scenery that Great Britain can show. Indeed it is this judicious blending of mountains, woods and rivers which imparts that ravishing beauty to so much of the Principality. Here then a few—very few—pairs of kites still endeavour to "live and have their being," but until the last two years, when proper precautions have been taken to outwit the egg-robbers, they have striven with little success to perpetuate their species.

Stray then to a favourite haunt of the kite and study this rare bird in its native fastness. It is late in the afternoon of a cheerless October day. A leaden sky and torrents of stinging sleet and numbing rain, emphasized by shrieking gusts of icy-cold wind, blur the entire panorama. Only occasionally does a prognathous bluff of the mountain peep through the enshrouding halo, as it lifts momentarily. Well may such an outlook breed disquiet in the breast of man and beast alike. Buzzards mew disconsolately from the crags ; a patriarchal pair of ravens exchange greetings solemnly, and nearly every animate object seems depressed. But not so the Barcud. For him, storm and tempest possess no terrors, as sweeping out from the oak wood

clinging to the bleak hillside, he floats across the " cwm " and works gallantly along the mountain flank opposite. It is true that he looks miserably bedraggled, but his spirit is unconquerable as far as the weather is concerned. Yet on the beat that he now patrols he will meet with scant success today. To better his luck he must try the valley itself, and a few strokes of his scimitar wings and many a twist of his cleft tail carry him to the vicinity of a little whitewashed farmstead—the typical Welsh abode. Well he knows this farm ; its inmates perhaps know him better, and more, they detest him. For many a downy chick and fluffy gosling have found their way to the seclusion of yonder wood grasped in the talons of the marauding kite.

For a few minutes the great bird hangs steadily against the storm within easiest range of the watcher standing on the devious track beneath. Then he curves down and settles momentarily on a gaunt, black, sentinel pine ; leaves it and hangs again, only to make a rapid swoop in the direction of a tumbledown barn. A quarry has been made, that much is certain, though no chick or duckling at this season. What is it then ? A shrill squeak proclaims that a rat is the victim, which like himself has ventured out, despite the elements, to snatch a hasty meal. . . . Barcud now drifts triumphantly across the valley back to the wood that he started from, and if followed in the mind's eye, he may be seen to alight on a broad, sturdy oak limb—his favourite dining-table—and after a preliminary look round to settle down to his hardly-earned repast. Presently his mate—for the two seldom hunt in company—looms dark and eerie through the mist, and the two birds, for some time before retiring to roost, sit motionless but alert in adjacent trees.

Turn to another picture. It is now a winter's morn. A week's hard frost has succeeded a heavy fall of snow, and forage is scarce enough for many a bird and beast. A steely-blue sky looks down on the ermined crests of the silent hills, but the weather, although hard bound in the iron grip of the ice-king, is nevertheless bright and crisp ; occasionally even the pale face of the winter sun sheds a few feeble rays on the countryside's spotless winding-sheet. A small party of kites—five in all—are wheeling slowly above the outskirts of the straggling village. At one time they are mere dark lines painted across an interminable grey background ; at another, rendered inordinately tame by the severity of

the weather, they are hovering close enough to the fortunate observer for him to note their streaked, reddish underparts and the scintillations of their wicked, yellow eyes. Their aerial evolutions almost defy adequate description. One pair mounting above their fellows wheel and slide in a succession of spirals with an enviable ease. Their movements appear to be wholly governed by their forked tails and they glide smoothly with the minimum of exertion. In fact it is the kite's tail which renders his flight such a paragon of perfection. Whilst the frost holds, these winged outlaws will take what providence throws in their path; they are rendered bold beyond their wont and will pounce down fearlessly on any scrap of offal or filth thrown, with a delightful disregard for sanitation, just outside the cottages of the hamlet. Now were kites always so harmless and such useful scavingers, all had gone well with them; but unfortunately their insatiable lust for poultry has often lead them into some ambush from which many a one was never to issue alive. The pity of it is that they could not have confined their raids to the beetles, carrion, moles, rats and rabbits which partly comprise their varied menu.

Spring has left winter far behind, and a fitful April sun smiles lovingly on the kite's haunt. Now that mists and tempests have vanished, let us examine it more closely. From this grey pinnacle towering hundreds of feet above its fellows, unlimited hill scenery—tawny yellow with its unkempt name of cotton-grass—confronts the vision. On these purple-rimmed hills heather is scarce, and where it does exist, is for the most part short and scrubby. Every little detail on the corresponding hillside adds a fresh charm to the scene; the coppery glow of the lifeless bracken relieved by intensely green patches of mossy turf; a "prill" rising from some hidden source in the womb of the mountain, gradually accumulating into a roaring cascade, to fling itself at length into the swirling current in the valley; and the delicate tracery of the ivy—and lichen-mantled crags, one and all accentuate an already beauteous picture. Up here in the deep gorges between the frowning hills the river, especially when viewed from above, suggests a serpentine thread of silver. It is shallow enough on the whole, but wend your way further down-stream to more cultivated parts and it swells into a mighty salmon river. As high as this salmon do not venture, but sewin, the coveted spoil of the hill-

THE ELEPHANT HAWK MOTH.

From a photograph by
F. Martin-Duncan, F.R.P.S.

stream angler, sometimes grace its limpid reaches, and trout there are in plenty. Down a twin valley roars another stream, now between alder-clad, fern-spangled banks—the otter's stronghold; now between lofty precipices of grey silurian, which in some parts suggest man's handiwork, so cleanly cut are they. At the juncture of the two streams a detached, conically-shaped bluff, a mediator as it were between two warring valleys, rears its rugged face. At its far extremity, where its lowest slopes lose themselves in the hillocky pastures aligning the river, it is well timbered, but the oaks are fewer and thinner as the heights are reached. On its other side a precipitous wall of rock, the haunt of fox and badger, dips almost sheer to the ever-bubbling stream. Here the slightest sound is noticeable; the air is rarified to an intensity. For example, how plainly one can hear the barking of that collie, itself a mere, ill-defined speck on the distant hillside; how close the ring of an axe echoing from the wood on the horizon. Here Nature is at her serenest and best; and here it is that the Red Kite still lingers. That is a glimpse of the kite's haunt. Now about the bird itself.

That wooded bluff presents two special features of interest. It once gave shelter to a noted Elizabethan outlaw; it has harboured a Barcud's nest time out of mind. The outlaw is now but a name to be conjured with, but a kite still sails round above it with a pair of buzzards for company. A crow darts out of the oaks below and gives battle in mid air; a skirmish of winged outlaws this, a guerilla warfare between two exiled clans. But the sable carrion bird has matters all his own way, for both kite and buzzard are sadly devoid of courage, and the buzzard's plaintive mewings mingled with the shriller scream of the kite and the aggressively raucous voice of the crow weirdly break the hitherto almost oppressive silence. The former are the first to leave; the kite soon follows, routed after a feeble pugilistic display, and the three vanquished warriors are lost in the crest of a distant hill. The crow, however, returns to his mate in the wood; and surely the kite has family ties there as well! At all events the delighted watcher, if he would not chance losing the sight of a lifetime, will do well to clamber down from his rocky perch, cross the river and enter the wood.

This thinly-planted, northerly oak wood has as yet hardly given so much

as a thought to its summery finery of green, and the trees stand nude and grim, a prey to the rude caress of the spring breezes. Consequently the bulky nest of the kite—if here at all—should not be hard to find. The wood is on a steep slope, and if entered from the top side, a greater portion of its interior is readily overlooked. A brief scrutiny reveals three nests, two of them larger than the third. That small one is unmistakably the crow's, but what about the other two? Kites' nests surely, and as if in corroboration of the thought, a slight movement on the fresher-looking of them arrests the gaze. By the Powers, a kite sitting on her nest! The glasses are soon on her, and the pale head, horn-coloured beak, yellow eye, bronzed-rufous upper plumage with lighter edging, and dusky primaries crossed over the long ruddy tail, are all noted with loving care. Stay a moment and watch her; then advance, and a noiseless brownish-red shape glides off the nest and out of the wood. By this time the truant has returned and the two great birds wheel and flap about excitedly above their violated hearth. The eggs, totally white at this distance, show up plainly, but scramble down the loose shale littering the brittle carpet of dead oak leaves and scale the tree. The nest, built in the fork of the main stem, gives no trouble to reach. It is a rude mass of sticks and rubbish, lined copiously but artlessly with mats of dirty wool, many of which hang over the sides which are little higher than the interior. As decoration—if for such purpose it be—there is a long piece of thin tarred rope, a strip of blue-striped calico, a few small bones and a sheet of outrageously filthy paper. This last item lies close to the eggs, and the whole concern—a veritable dust-bin—smells atrociously and is choked with vermin.

If the ornithologist is a true bird-lover, his eye will kindle at the sight of the three great whitish eggs with their scratchy markings of reddish and yellowish-brown; not with the gloating exultancy of the sordid egg-collector, but with feelings akin to wonder that, owing to these monsters and the universal use of firearms, any kites should survive at all.

The kites are still sailing above their fastness as the naturalist steps out of the wood, but overjoyed though he is at the finding of so rich a prize, the whole a picture to be framed in red in mind and notebook alike, he yet feels not a little sadly: for he deems it only too probable that some rascally fellow, knowing little of and caring

less for the birds themselves, may pass that way and despoil his friends of their cherished treasures. Gloomily he reflects that should this be so, yet another year will pass away without adding young kites to its calendar, for well he knows that seldom will this bird lay again the same year that she is robbed.

Fortunate indeed then, if, when on his next visit six weeks hence, he still sees the Gleads far above their haunt, climbing the air sublime; thrice lucky, if on ascending to the nest a second time, he there finds the fierce-eyed, savage-looking brood of the Red Kite.

Note.—Glead is another name for the kite.—J. W. B.

XXXIII

THE PLEASURES OF COARSE-FISHING

"Though the whole earth is given to the children of men none but we jolly fishers get the plums and raisins of it by the rivers."—Charles Kingsley.

THERE are salmon and trout anglers who affect to scorn angling for perch, carp and roach as a pastime beneath the consideration of the true fisherman. And yet when Izaak Walton spoke of fishing as "the contemplative man's recreation," I am sure that he was thinking of the angler with the baited hook and the float, and not of the more active fly-fisher, who whips the runs and glides as he moves along the river bank, or wades in the stream. The distinctions between "game" and "coarse" fish are a little arbitrary, and the fly-fisherman's disdain of the "bottom" or "bait" angler is a kind of piscatorial snobbery. Most good fishermen from Walton to Frank Buckland have practised coarse-fishing; and there are certain fly-fishing adepts who openly confess that, upon occasion, they forgo the chance of trout for the certainty of roach.

But why should I attempt to write an apology for the bait fisherman? He is in the truest sense an angler, for his methods of angling are varied, and his prey is often more wary, coy, and elusive than salmon or trout. Roach, for example, in clear, shallow waters are the shyest of fish, and quite as difficult to stalk and lure as brown trout; while the great buff-backed chub, which appear such stupid-looking fish when lying dead on the bank, are singularly alert when basking beneath the trailing boughs of the

willow or in the shadow of the alder bushes. The capacity for profiting by the teaching of experience is by no means limited among fish to members of the salmon family. Every coarse-fisherman knows how educated are the pike and roach of much-fished rivers and ponds.

If worthy Piers of Fulham revisited the Thames, he would find that since he wrote upon the art of angling, in 1420, the fish of that goodly river have advanced in wisdom concerning the wiles of fishers. Leonard Mascall, too, who wrote of "Fishing with Hooke and Line," in 1590, would assuredly discover that his tackle was too coarse for angling in our day; and fifty years ago a Dove fisherman asserted that Izaak Walton would open his eyes could he but behold the devices which are now necessary for the capture of fish from that clear, crystalline water wherein he used to cast his baited hook.

Nowadays the fisherman who would excel in the outwitting of carp, bream and barbel must needs handle slender tackle and provide dainty baits. Indeed, coarse-fishing becomes a finer art each year; and there are fly-fishers, with delicate methods and plenty of experience in taking trout and grayling, who would be baffled ignobly were they set in contest with the diffident tench or the cunning carp of an old pool.

As for tench, shall we ever be able to explain their long and sullen apathy towards every bait that is offered to them, and the equally bewildering avidity with which at rare hours they seize upon the worm-baited hook? And carp — those bellows-shaped monsters of the muddy, weed-grown pond—who shall say these do not call forth to the utmost extent the angler's ingenuity of brain and deftness of hand?

I recall how as lads we used to catch roach and dace from the Thames without much forethought and skill, and with the poorest of tackle. Thames-side fishermen assure us that there are quite as many fish in the river as in those days of our boyhood, and I do not doubt them. Probably the fish are more abundant, for they are better preserved to-day, and there is constant re-stocking of the water. Yes, it is not the scarcity of roach and dace that accounts for my meagre catch of half a dozen fish from that well-known swim of my youth, but the scientific dry fact that the quality of the fishes' intelligence has improved during these twenty odd years. And so it comes to pass that I must fish much finer and

further off than in the old days, if I wish to carry home three or four brace of decent sized roach from this academy of fish.

All this access of knowledge among those creatures which our earlier writers on angling named "the finny denizens of the mere" has not lessened the pleasure of fishing, but, perhaps on the contrary, heightened it by the stronger element of uncertainty. For that which is perfectly easy ceases to be interesting from the point of view of the sportsman. Upon those infrequent occasions when I have filled a creel with fish, I have experienced the satiety which almost depresses. The glory of success is absent when fish come recklessly to the hook and remain "on the feed" throughout the day. Yet against this facile triumph one sets philosophically those long blank hours of east wind in winter, and dazzling days in summer, when fish are torpid with the cold, or parboiled with the high temperature of the water, and refuse to even nibble at the daintiest brandling or freshest gentle. Truly, your patient fanatic of the angle deserves now and again a taste of surfeit.

Nowadays single hair casts and the finest of gut, known as "gossamer," must be employed by the roach fisher. He must know, too, that bread crust as bait is superseding the paste made from crumb, and that failing the cube of bread crust, the fish must be tempted with paste of a red or yellow hue. In quick-flowing streams, where the biggest roach and dace often breed, you will only scare the fish to panic if you throw in a cork float. A tiny quill is all that you dare to place on your almost invisible gut, and the cleverest anglers will dispense altogether with a float. Others again will carefully entice these cautious fish with a small artificial fly, floated naturally on the water.

I think that perhaps the angler for coarse fish comes into nearer intimacy with Nature than the fisher for trout. For that shy and watchful dame is apt to hide her most secret charms from the fisherman who strides the rocks of a tumbling river, with his eyes upon the water for a "rise," and his right arm in constant motion. The beasts and the birds retreat to hiding as he scrambles, waving his eleven feet of greenheart in the air; and in his heed to his footsteps and his flies, he is absorbed and deeply preoccupied. But bait fishing is placid. It allows a freer use of the eyes, and conduces greatly to tranquil reflection. You can at the same time watch a

bobbing float, and note the changing influence of the light upon the colour of the water, the tone of the foliage, the pageant of an autumn sunset.

Coarse-fishing (save the designation !) is a fitting amusement for the thoughtful, the author, the philosopher, and especially for the poet. There is something healing and boon in the recreation for the man of affairs and those whose lives are spent in bustle. Fishing of this inactive order was the enjoyment of men so diverse in character as George Borrow, Herbert Spencer, Charles Bradlaugh, and Millais, all of them strenuous workers, and yet very boys at this pleasant play with rod and line.

I often have serenely sweet dreams of fishing, but never nightmares of this gentle sport. We love to recall and think upon angling days, because these are the hours of untrammelled living, spent in the soothing company of Nature's wild children, and whispering willows and aspens, out of the reach of the human babble and roar. All things, except fish, confide in the fisherman. I was sitting by the Norfolk Bure, when a swallow perched upon my rod, and chirped to me. By a pool of the Dee, in Wales, the stoat led her family of five close to my feet, and in a river in Spain an otter swam towards me across the stream, and looked with surprised gaze for an instant in my face. And how often have the herons swooped down close to me, the wild ducks peeped from the sedge, the coots croaked their friendliness, the voles surveyed me curiously, and the blackbirds and thrushes warbled in the nearest bush.

It is a great thing, too, to know the secrets of a river ; to point here in this eddy and say : "There, I know, lives a very big perch that I have seen from time to time during these five years" ; or to have learned that on the worst of days one may with assurance resort to yonder bend for a few silvery dace. Such watercraft, or knowledge of a river, increases threefold the interest in a stroll on its quiet banks. You have a lore that the casual person lacks ; you possess an insight which inspires pride. Every season teaches you much that is strange and fresh, for no two fishing days are alike, and this sport is notable for odd adventures and curious mishaps. An observant and reflective fisherman was old John Dennys. He knew many of the esoterics, and could read most of the signs of Nature. This angler and poet lived before 1613, and wrote verses upon coarse-fishing. He tells us that :

"Carp, eel and tench do love a muddy ground:
Eels under stones and hollow roots do lie,
The tench among thick weeds is soonest found."

Every fisherman of experience will confirm most of what Dennys states as the best hours of the day for fishing:

"From first appearing of the rising sun
Till nine o'clock, low under water best
The fish will bite; and then from nine to noon.
From noon to four they do refrain and rest;
From four again till Phœbus swift hath run
His daily course, and setteth in the West;
But at the fly aloft they use to bite
All summer long from nine till it be night."

I think that the rhymer is a little astray in the statement that "the fly aloft" will always entice fish "all summer long from nine till it be night," for July is notoriously a poor month for the fly-fisherman, whose better chance is at dusk, and best chance of all after dark.

To be an "all-round angler," as it is termed, you must master many arts, and possess intelligence and much patience. You require keen vision, quickness of observation, skilful fingers, calmness and perseverance. And I am sure that if you acquire these parts and attainments as a fisherman, they will profit you in other pursuits of life. The time spent in fishing is time well spent for many reasons of health and the fostering of faculties. In the main, anglers are good fellows, kindly, contented, and enthusiastic for their hobby, which is one that I have noticed as eminent in the satisfaction with life on the whole which it provides. No man can be very sad, or very bad, who quietly follows "the sport sae entrancing."

It would be a grave indignity to the fraternity of sea anglers if we forgot to refer to this branch of the art of fishing. Sea angling has to-day its thousands of enthusiasts, and year by year its methods are becoming "finer" and its appliances more intricate and ingenious. The hand-liner, with his thick cord and big hooks, is quickly being superseded by the rodman, with his more delicate tackle, roach gut, and artistic ways of enticing suspicious grey mullet and watchful whiting. This new field of sport is a wide one. The sea is universal, boundless and free; no man can warn you off its waters with threats of actions at law; and the variety and quantity of the fish that swim in it are wonderful.

From the tarpon of Florida—a fish for giants to capture—to the dabs of Southend there is plenteous sport for the well-to-do or the impecunious. The sea fisherman, who trails his bait for mackerel far out in the glittering blue bay, the adventurer, who fishes for bass with the fly from the reefs

at the outlet of the estuary, and the lad, who dangles his paternoster from the jetty head, learn of the wonders of the ocean and the ways of the fish that play therein. The sea is a huge, restless, ever-varying companion of the angler, more stimulating than the staid river or the brooding mere. It inspires also a kind of fear that fascinates as we gaze over the vast grey space from an anchored skiff in a lonely bay. How weird, too, are many of its natives—numbers of them hardly classified by the naturalist—and how beautiful the hue and sheen of their scales!

It is good, then, to be a lover of the angle, to pry intimately into the mysteries of the waters, to breathe the thin air of the moorlands, to taste the intoxication of the salt sea, to watch the moods of the seasons by the riverside, to set one's cunning against the intelligence of fish, and to know the contentment that attends upon a simple pleasure.

XXXIV

PEARL SKIPPERS

"The fly buzz'd up in the heat."

PUNCTUAL almost to a day I found my lovely little pearl skippers at their prime on the hill-side where I watched them last August. Roughly, pearl skipper is large skipper, plus a set of natty, four-sided figures, tessellated work, that are imprinted on the upper and under sides of his wings. These light-coloured marks—had the naming of the butterfly been mine, I should not have suggested pearls—are his chief distinction, but I fancy he also differs slightly from the large skipper in size and in one or two finer details. I have only seen him alive—so alive too!—on his native down; never in the cork-lined box, nor wish to; and he is not very easy to get quite close to; but, judging by what I have seen of him on a blossom about a yard off, his horns are not ringed with white, and he wants the faint flush of purple on the lower wings which his cousin has.

He is a gem, though he does not flash with gemmy colours; is of the

THE WHITE ADMIRAL BUTTERFLY.

From photograph by
Reginald B. Lodge.

live bijoutry of nature. He flies in the fizzling heat of an out and out August day; whips from flower to flower, mixing the nectar of birdsfoot trefoil with the nectar of hawk-bit; and, after a few sips, will settle on the ground or on a leaf, draw-to those muscular little wings, clean horns with legs, and unroll and clean his trunk too.

He is scrupulous in this as are most butterflies. Comfort, not cleanliness for its own virtuous sake, and not fastidiousness or nicety, is the secret of all this wiping of trunk and horns, and perhaps of face, too, after a course of sweetmeats. All the same, it is a very pretty thing to see the pearl skipper purify himself between the feasts. Then, whisk!—he is up and off, chasing or chased by another pearl skipper at such a hot pace that the eye cannot always follow the combatants or lovers, whichever they be.

Pearl skipper and large skipper, which we might call blood relations, first cousins even—though, unlike first cousins in human relationship, they are not suffered by Nature to intermarry—have come from some common ancestor—have evolved, if this term says more. I cannot understand how any one can doubt that these two skippers, that all the skippers, were at the start one skipper; or the blue butterflies or arguses one blue butterfly or one argus; that is to say, one kind of skipper, argus or blue. That these forms of life began separately and independently of each other is unthinkable.

No; the pearl skipper and the large skipper were evolved and distinguished by gradual creation. But what exactly gave the one his pearls and denied him white rings on the antennæ or horns; what gave the other his white rings but denied him the pearls? Here is a riddle as unguessed as that of the making of Antares and Arcturus, the great ruby and amber stars of these August evenings. Half the secrets of life and evolution lie in epitome in this dot of a butterfly. Common sense tells us the skippers evolved through a common ancestor. But darkness follows on this glimmer of light. Why and how pearls for the pearl skipper? Nothing in food, habit of life, or haunt gives the clue. Take the pearl skipper to pieces, put him under the most powerful microscope, and I doubt whether his physiology will help you forward in the least. Here theory comes in with the general principle by which pearl skipper took one branch road, larger skipper another, on the map of life. But, unfortunately, it cannot offer a tittle of evidence as to

this particular case of pearls and rings; and it leaves one unsatisfied. The pearl skipper's path of evolution and the purpose served by his travelling this path are darkly hid away.

XXXV

SUMMER IN A HEATH COUNTRY

"There's night and day, brother, both sweet things; sun, moon and stars, brother, all sweet things; there's likewise a wind on the heath."—GEORGE BORROW.

THERE is one type of British landscape which waits every year until the verdure of most fields and woodlands is dimmed and staled by months of summer sunshine, and then breaks forth into all the gaiety and freshness of unexhausted spring. In April and May, when all the copses and green meadows are day by day blossoming and budding with an endless succession of new verdure and brilliant flowers, the heath moors and pine woods stand gloomily aloof and bare. Except where the birches shake out their sprays of delicate green, or the tardy alder unfolds its duller foliage in some marshy bottom, the eye almost completely misses the freshness and awakening of spring among these swarthy wastes; in the days when the green lanes and budding hazel woods are overflowing with sheets of primroses and bluebells, and all the colour and perfume of the advancing year, there is often not a single spring blossom to meet the eye in this inert, slow-blooded landscape, where the dark pine boughs and withered, rusty heather-bells seem to despise the generous impulse of the season, and to clasp themselves still sullenly in their winter weeds. Three months pass, and then all the glow and vigour of the spring and summer in one break forth among the heath and pines, with an intense and concentrated brilliance which is all the more keenly conspicuous by contrast with the now tarnished freshness of the shorn hayfields and bronzed deciduous woods. Lying in the fringe of the July pines, where the heather-tussocks stop short, like curling waves, on a smooth shore of dry, shining needles, we see how the whole scheme of vegetation within our view is at the very zenith of its brilliancy. The pines themselves, so sad in April, and regardless of the rising flood of spring, are now all tagged and tufted with the light, fresh green of their summer

growth. The bushes of broom and gorse beneath them are in like manner gay and lustrous with the long shoots which they have put forth since the fading, a few weeks ago, of their yellow blossom, which brought the first hint of brightness into the withered moors. Everywhere is strong, new verdure, belying the age and lethargy of waning summer, and against the background of brilliant green the purple of the riotous heather glows forth with a double brilliancy and power.

Heather country is found from end to end of our islands, and no one who has been bred to the wide and open moors can ever change his loyalty, even if he would, for the chopped sky-lines and broken screens of woodlands in most of the heath-tracts of the south. Yet it is in the alternations of the stately evergreen pine woods with occasional sunny spaces where the heather lies in lakes of purple, as well as with the barer sweeps of moor and bog, that the strange intensity of this July and August spring-time of the landscape reveals itself with the greatest variety and fire. From the spot where we have been lying, in the shade of the higher pines on their shore-like knoll, the land slopes down into a little clearing between the bright-tagged, half-grown saplings. The upper part of the clearing is filled with the strong purple stain of the common heather, fringed by the scantier growth and pinker bells of the cross-leaved heath, and the duller stars of the ling, now tardily kindling into bloom. A few feet lower the heather breaks away into wet, green, mossy ground, laced and belted with tussocks of pale grasses, and tagged with the cotton-grass's heads of white. The grey-green bog-myrtle half fills these lower lands with a growth like a dwarf sallow ; the heat-dance flurries above it under the July sun, and when the wind passes this way, its aromatic fragrance, like lavender mixed with thyme, flows over us in a warm noonday tide.

Through the clean heather-tussocks go flapping the big, handsome grayling butterflies ; grasshoppers chirp and leap upon our outstretched arm, tiny azure dragon-flies vibrate like long-winged gems against the purple heather and green firs. There is a burnished brilliance about all the colours of this summer heath-landscape, and a half-tropical sense of confident response to the sun, which produce a widely different impression from the tender, delaying spring-time that brightens the rest of the English country in its earlier day. And yet it is full of a first exhilaration and freshness now

in July, which has wholly vanished, except at dawn, from the heat-stained fields and woods of more pastoral regions.

Nowhere has age-old Nature been less disturbed than among all lingering tracts of marsh and fen; and even in the smallest patches of wet ground that stud the heaths there is a fugitive northern flora which has long been banished from subdued and cultivated lands. Though some of the most characteristic flowers of the wet northern moors, such as the dew-spangled butterworts, and the single, white, veined blossom of the grass of parnassus, are lacking to the heaths of Hampshire or Surrey, their absence is not enough to diminish the true impression of remote and ancient wildness in these moorland scenes, where the long wind comes sighing in the sun over rolling heather, and flutters a thousand pennons of the cotton-grass on the tussocked mires. There is no other plant that seems so full of the lonely freedom of the wastes as this white-tufted sedge, that gleams and flutters so keenly both in the sunshine and in the obscurity of the moonless nights. Its lavish and prodigal harvest, the crown of the whole year's suns and rain, is as void and sterile for man as the white wave-tops that fleck the unharvestable seas; and when we see it thus expending its "labour for that which satisfieth not" over an endless field of the moor, the deep, underlying sense of the utter indifference of wild Nature to human needs seems expressed in its highest power. Another characteristic plant of the undrained patches in the heath is the bog asphodel, with its graceful six-inch spire of golden stars; and in the same wet places cluster the strange and cruel little sun-dews, with their small, flat leaves bristling with red, glutinous hairs which entangle and seize the small gauzy flies which alight on their watchful trap. Both sun-dews and asphodel come into bloom during the great July outburst of colour and life in the heath-country, and both are typical plants of desolate moorland bogs and marshy mountain-sides. The flower of the sun-dews—of which there are two common species, one with thong-shaped leaves, and the other with round—is a small spray of dull white blossoms on a hair-like stem a few inches high. Though not a very conspicuous or beautiful blossom, it is graceful in form, and well proportioned to the small cluster of prostrate leaves; while the whole carnivorous little plant, as it lurks on the wet peat among the grass and heather, is one of the most interesting species in a

most distinct and interesting group of neighbours.

The heather ceases in these wet, open flats of the bog-myrtle, the cotton-grass, and the dull green clumps of the deer-grass ; only on some of the larger emerging tussocks there cling a few pink-belled sprays of the delicate cross-leaved heath, which is a greater lover of moisture than either the purple heather or the ling, and often fringes the border of the bog, beneath the edge of the broad purple stain, with a broken border of its purer and tenderer dye. It is never found in such wide, unbroken sweeps of colour as are often formed by the two commoner species, the so-called "fine-leaved heath" and the ling ; but where it grows in single clumps, with its delicate, wax-like bells and sparer whorls of greyish and downy leaves, it has a refinement and delicacy of beauty beside which the two other species seem coarse and insistent in growth. It is this note of insistency, indeed, which is the very life of the strong purple heather spread in its sheets of Tyrian bloom ; under the faint blue of the sky and the gold of the July sun its full blaze strikes upon the senses like the clash of martial music. The fierce July spring-tide of the heath-country knows but little of half-tones of colour, or gradations delicately unveiled ; and it is the general lack of all such gentler shades which enhances the graceful delicacy of the scarcest and most isolated of the heaths. But its delicate pink is wholly submerged and lost in the general view of these great sweeps of purple, that the strong green of the firs, and here and there the violent ochre of a scarped sandpit or winding roadway, combine to intensify with the strongest possible contrast. In certain of the southern pine-woods a sheet of purple no less brilliant and unbroken, but clearer and more roseate in tone, is drawn across the sunny clearings in July by the flowering of the tall rose-bay willow-herb. This is as high and stately a flower as the heathers and other blossoms of the open moor are close and clinging ; and from the greater scarceness of its prodigal display, its massed, level thicket strikes upon the eye with an even greater sense of amazement, as the flood of brightness breaks slowly, like the dawn upon the sea, through the darkness of the columned wood.

Within the pine woods of this region there is an absence of the usual English wealth of small-bird life which adds a double solemnity of silence to the universal songlessness of those July and August days when the heath-

country finds its spring. Occasionally a jay will screech through the upper boughs, or a green woodpecker escape with dropping flight from bole to bole; and sometimes, in the tufted, cloud-like canopy, the ear and eye become distantly aware of a tribe of titmice twitching and chirping in subdued animation upon their way. But the lack of all undergrowth denser and more lasting than the stately, waist-high bracken makes most birds unfriendly to these woods, at the same time that it makes a hollow and solemn whispering-gallery of the great ranged aisles between the red shafts under their roof. In these halls of a thousand columns the voice rings strangely even at noon; yet, deep and constant as is the silence, there is rarely or never that utter privation of sound which aches at times in a great wood of beeches or a thicket of hollow yews. Almost continually, on these expanses of wide, open heath-land, there is a draught of summer air, passing to spend its murmurs on the lofty shore of the pine-tops under the sun; and far below, on the dry, grey carpet among the furrowed boles, the wood is full, like a shell, of a song that underlies the stillness, and makes it a restful calm.

Yet so low and even is this whispering of the upper pine boughs on a summer day, that the least sounds nearer at hand stand out against it with intense precision and clearness; the beetle can be heard scraping in the loam on his subterranean way for long minutes before the needle-carpet parts above him, and he comes forth from the grey sand to the light. Sometimes a sharper rustling is heard by the attentive ear to disengage itself from the undercurrent of the murmuring boughs; and this is found to be the city-noise of one of the great hills of the large black ants, which stand, piled of fir-needles, among the bracken on the floor of the wood, built often round the core of an ancient honeycombed stump, and sometimes as big as a small haycock. At first, when we begin to watch the surface of this great erection of such tiny workers, all boiling and simmering with life, it seems a chaos of activities entirely devoid of sound, a stir as inaudible and interwoven as the heat-dance that flurries over the sand outside the wood. Then, out of the silence that falls as our foot ceases to disturb the pine-carpet, we hear the tumult of the black ants' city rise plainly upon the ear, not in a single note of sound, but with an infinite and microscopic complexity that is the total sum and burden of a myriad individual lives. At such times, within

HARVEST.

From a water-colour by
Tatton Winter, R.B.A.

the silence of the summer pines, the scale of our human perceptions seems changed, and the range of our senses illumined; and when, at the end of a long afternoon in the wood, the red sunlight of the outer world falls level upon the tree-trunks from the western edge, we pass out into the evening glow on the heather with the strangeness of a return from fairyland.

XXXVI

AUGUST IN A BREYDON PUNT

> "Birds—Birds! ye are beautiful things,
> With your earth-treading feet and your cloud-cleaving wings;
> Where shall man wander, and where shall he dwell,
> Beautiful birds, that ye come not as well?"
>
> —William H. Thompson.

In two hours' time it will be high-water. An August sun is within an hour of its setting, and a kindly south-easterly breeze promises to hold up long enough to fill our little tanned sail, and land us easily at the small staithe that forefronts the rond on which the house-boat *Moorhen* rests. In the hotter months we can often run up Breydon on a favourable wind blowing coolly from the sea, and as often depend on a steady return in the morning, with a bowling breeze from the nor'-west behind us. Why tiringly row when the winds favour you?

There are few days and nights on Breydon that do not present some signs of bird-life; now and again one may sail from end to end of this great saltwater lagoon without seeing more than a few commonplace gulls and piping dunlins; and on other occasions find the old estuary teeming with wild birds, and noisy with their "clattick." It is he who goes often, and at all hours, who naturally falls in with the greatest number and variety of species: a haphazard trip may be exceedingly disappointing. And the "glory" of Breydon has, in a great degree, departed. The drainage of vast tracts of marshlands, the growing up of the mud-flats, and other necessary and unavoidable circumstances, must be blamed for this to a very large extent.

But we are seldom wholly disappointed in the month of August, the last month of Watcher Jary's rule; when young birds are on the move, and immunity from molestation is assured. Let me give you one or two typical August entries from my note-book.

"August 15, 1898. Observed a flat, which the rising tide was gradually diminishing in area, covered with a crowd of birds. Peering at them from the 'wall' through my binoculars, I enumerated 24 herons, 200 curlews, 2,000 gulls (nearly all asleep), 8 common sandpipers, 1 green sandpiper, and 1 greenshank."

* * *

"August 29, 1906. Breydon fuller of birds this evening than ever I saw it before: they were spread right away from Stone Corner, west of my house-boat, to the 'Lumps' near the north-west drain. They mustered thousands! including knots, godwits, curlew-sandpipers, dunlins, little stints, herons, curlews, ringed plovers, redshanks, greenshanks, common sandpipers, little terns, and gulls. Of gulls there were at least 3,000 common, black-headed, and black-backs."

* * *

I went early on the morning of September 1, and saw, I verily believe, *more guns than living birds!* A few knots, ringed plovers, turnstones, little stints, etc., had been slain, and the survivors had taken the hint and gone. Most of those shot were immature birds: and in one small punt, besides two or three small birds, I observed two gunners, four double-barrelled guns, a rifle, and a dog!

What a clamour the black-headed gulls are making on the flats as we pass them—a confused, chattering squealing chorus joyously forced from a thousand throats. *Ridibundus* gabbles for the very fun of it, and *Larus marinus*, the greater black-backed gull, joins in with a scolding kind of croak at intervals, wondering, no doubt, what they find to so gossip over. Turn your glasses on those dunlins at the margin of the flat. You will notice them busily "pricking" about with their inch of bill into every tiny worm-hole, and with each capture tripping nimbly down to the shallows to wash it. I used to marvel how all the birds got a living here: I do not now, for the fecundity of the red "mud-worms" must be great. See, I can turn out half a dozen in a single handful of the ooze. The wonder now to me is why the dunlins and the ringed plovers need to work so many long hours at snapping up worm, and *Corophium*, shore-hopper, and little shrimp. And they appear to be at it night and day; and only seem to enjoy an interval of respite when at their ablutions. While we are debating this question a little flock, evidently just in from a long journey down the

coast, answering the piping call of their relatives who are hunting, sweep round in lessening circles, drop upon the higher part of the flat, tuck their bills into their wing-coverts, and forthwith fall into a sound slumber. There is no preparatory dozing: they drop into sleep at once; and the loud clapping of our hands merely causes them to wonderingly raise their heads, and change a leg; and then they settle once again to sleep. They have not yet learnt to "'ware gunner."

There pass us two or three eel-fishers, who are going Waveney-wards, to "bab" the long night through, patient as the herons that will bear them company. The piping notes of the common sandpiper, weak but shrill, are constantly heard as this wall-loving species flits from one spot to another, disturbed by a pedestrian, or impelled by its restless nature. It is greatly nocturnal in its habits, and pipes when most of the waders have ceased to call. A heron passing overhead shrieks a note of recognition to his fellows, and directly lowers himself into the fiery ripple painted in glowing red by the setting sun. A small parcel of lapwings winnow their way across the western sky, looking black against the wave-like fringes of yellowish clouds, now so fantastically gilded on their topmost edges; and which in a few minutes will deepen into furnace-red, as the sun slips slowly below the purpling horizon. Give me a Breydon sunset before all others!

Two well-known Breydoners—Fred Clarke, the punt gunner, and Jary, the Breydon Society's bird watcher—are making a haul with their smelt-net hard by the latter's house-boat. The bight of the net is just being drawn in as we lower the sail and run the punt's nose on the mud-flat beside it. What a kicking and confloption of fins and tails! what gasping and contortioning of suffocating fishes! Here and there a smelt squirms feebly in the meshes, and savage shore-crabs tear and struggle in vain endeavour to free themselves; shrimps (*Crangon vulgaris*), ditch prawns (*Palæmon varians*) and little gobies tumble back out of the net into the water again; and scores of juvenile herrings push through again and escape. Catches vary greatly. This haul accounts for thirty smelts, a few atherines, a vagrant grey mullet, a score small flounders, a few viviparous blennies, an eel of some size, and a couple of lesser weevers. Cautiously Jary tips out the weevers on to the flat and grinds them in with his heavy heel. He will tell you they "sting," and that their venom does not lessen

until the tide has finished ebbing. And certainly the spiteful looking little fish does grievously hurt with the ugly spines of his first dorsal fin; and, moreover, is exceedingly adroit in stabbing with them, as I have on more than one occasion determined by experiments. In a box in the boat we observe several score smelts carefully "laid forth," so that neither fin nor scale shall be broken or disarranged. Clarke will hurry these away in boxes by the mail train, and they will grace the tables of the London *parvenu* to-morrow. We settle for a chat on birds that Jary has lately seen, and *booked*; and pick out a big white prawn (*Palæmon squilla*), a pretty little squid (*Sepolia rondeletti*), and some isopod crustaceans which we find among a lot of shrimps, trawled up in the afternoon, lying in a "ped" in the stern-sheets of the house-boat. What a dreary time six months' vigil on this great lagoon would be without an occasional spell of recreation in the midst of it.

The tide has reached its highest level, and twilight will soon be on us: we out with our quant and push up the winding drain that ends its sinuous way a short boat's length from the house-boat *Moorhen*.

* * *

Whilst I am lighting the fire and getting the kettle on the way, sit you in the stern-sheets, and listen to the various bird-cries that make musical the eventide. The young crescent moon, strengthening as the gloaming deepens, touches the rippling tide and the moist flats with silver, and a star or two look at themselves as in an abyss, reflected miles below us! Throw this blanket round your shoulders, for the air is moistening, and the cattle on the marsh behind us are lost sight of in the quick-rising steam-like marsh mists. Didn't you note just now the quack of passing fowl? I heard the "whiz-whiz" of their wings distinctly: and now! hearken to the bleat of that snipe. A lot of red-shanks are piping on the flat there; you can see them like black dots in the silver streak of the moonlight on the opalescent mud. "*Pleu! pleu! pleu!*" That's the shrill call of a greenshank feeding in the "low" at the other end of the rond. He is always prating, no matter how employed; and he varies his clanguor scarcely half a note. Not so those curlews feeding somewhere to the southward: you may pretty clearly guess their doings by the variety of their notes. The curlew will scream a high-pitched note when you suddenly

surprise him ; he will ripple his pipe when comparing notes with his fellows ; ring out a sharp clear call when he tells them he knows of a better feeding ground, and run through quite an octave in as many moods and as many humours. It is difficult for me to attempt to give the inflection of his notes by a process of spelling, for no two persons would give them the selfsame renderings. Spend your days and nights with him, and you will learn his language. There are other sounds to be heard at intervals : the noctule bat is still hunting above head, occasionally expressing his delight to his fellows at catching such a jolly great beetle ! A whimbrel and a heron now and again cry out impatiently, and a gull, disturbed by some sharp biting parasite, or by an unexpected and accidental push from a wakening fellow, shrieks out, as some people do in their slumbers. We notice, too, the "suck" of the eel, the splash of a flounder in the drain as he dashes into the shallow after a parcel of shrimps ; and small crackling noises emanate from a hundred clams as they squirt in sinking themselves in their burrows in the mud-flat.

Let us now discuss our supper : then we'll lower the lamp, roll up in our blankets, and turn in for the night. We take a last look round ere we close the doors ; the thousand lights of a still busy town twinkle in the distance, and are reflected again in the nearer waters ; the wind has died away altogether, and but for an occasional bird-cry, and the low of a bullock, silence profound reigns all around us.

* * *

Last night we slept soundly. Our horsehair cushions were a bit hard, and the novelty kept you awake awhile ; and, perhaps, my continual commenting for a time interested you. But to my last remark or two you were oblivious : you had "gone" and it remained for me to follow your lead. Those who have "done" Broadland know that sleep needs little seeking. Two hours after sunrise we hear the pattering of tiny feet on the cabin roof : the "*cheep, cheep it*" of a young pied wagtail informs us who our early visitor is. A small insect or two had no doubt come to grief in the night in the moisture settled on the white top : and these had attracted the passing bird. The meadow pipit sometimes visits us too. A kingfisher announces his presence on a stump hard by; he is on the alert for a goby; or a stickleback, which is quite as happy in the salts as it is in the fresher ditches. But

for the kingfisher's shrill alarm-note, always loudest when seeking safety in flight from real or fancied harm, he would far oftener escape, and remain longer a delightful ornament to our watersides.

The tides on an easterly wind are usually low. A nor'-wester sees a greater bulk of water sent into the German ocean, and Breydon gets a foot or two more of it. Southerly winds make poor tides too. Sometimes the highest flats are two feet under; at others half of them remain uncovered. Five decades ago the flats were bare less than the third of a tide: they have "silted up" wofully since then. We will not discuss the causes, but will rest content to see the most of things as they are to-day.[1]

Now then, open the boat doors gently. Have your glasses handy. By the gabble we can hear we must have a goodly menagerie of birds around us on the yet uncovered flat. Black-headed gulls in some numbers are scattered all around, most of them paddling about in the inch or two deep puddles here and there dotting the flat: very few stranded shrimps and little fishes will escape their keen eyes. Several are doing something very like a step dance, their flat red feet pattering mechanically at a great speed: this is done to disturb the worms and other small invertebrates that are in hiding: let them but make a dash to escape, and the gull "pins" them in a moment. A foot long whiting or an unfortunate smelt, left behind by the falling tide, is a welcome addition to the sea-bird's larder. The queer antics, the harmless squabbles, the sips and dips in the shallows, make up a great deal of the joyous birds' life: the little fellow "*Yahs!*" for very exuberance of spirits. It is a pity that every costumier who makes up "murderous millinery" cannot watch for at least once in their lives a happy scene like this.

There! your footfall has disturbed them all; and away they wing themselves to a safer location. Those great "grey" gulls yonder, and their elder brethren the adult "saddlebacks," are patrolling the stranded *Zostera* and the tangled "raw" weed (*Chætomorpha linum*), at intervals digging into it, and flinging it aside in big-tufted bundles, searching for *Carcinus mœnas* (the shore crab) hiding beneath in fancied security. The upturned crab may protest as he likes, but to no purpose, the strong mandibles close at once upon him, and now a crushed, lifeless, limp crustacean,

[1] The author has fully discussed this problem in *Nature in Eastern Norfolk.*

he is the next moment swallowed. A score or so of these hungry gulls will make off with a peck of these abundant creatures in a couple of hours' hunting.

The tide is perceptibly rising on the flats. Turn your eye to the south-east, and you will observe the water spreading, finger-like, over the mud, lifting the grasses as it expands ; now one finger joins another, and drain overflows to drain. In a couple of hours' time there will be sufficient covering everywhere to float off all wading birds shorter legged than the redshanks. They will probe and potter about until belly-deep, and will then hie away to the Bure-side, until the ebb has sufficiently fallen to bare again the area immediately in front of us. Yonder fly three young mallard of the year ; hard behind them follows a sheld-duck. Considering that sheld-ducks breed in the northern part of the county, and that they love the univalves—the *Hydrobia ulvæ*, and one or two allied forms that swarm the semi-marine vegetation—it is strange we do not see this species more frequently. Seventeen is the greatest number I have seen at one time here, but small parties occasionally drop in ; and young shovellers now and then visit us in early autumn.

* * *

But we must prepare for breakfast. You feel like having a dip ? I cannot recommend one, for the mud is soft and the water is hardly so pure as you find it in the sea. Get out on the rond and I will dash a bucket or two of it over you : and then while you are lighting the fire for the coffee and bacon I'll trot round the marshes and hunt up, if possible, a few mush-rooms ; and bring some eggs from Banham's farm. Banham and his men are already busy turning over the swathes of marsh hay hard by the railway yonder.

Breakfast over, we take a stroll along the walls, and drop in upon Fred Clarke, the gunner, at the far end of the "big" rond, for a yarn on birds and Breydon. Fred spends most of his time on Breydon, and seldom goes home but to dispose of his eels or wild-fowl, and to replenish his stock of water, bread, and powder. A man of his kidney is worth gossiping with, for there are stored away in his mind much Nature-lore, and many interesting reminiscences of sport and adventure. We put to flight a number of linnets that are feeding among the luxuriant *Chenopodium album* that always flour-ishes on a newly-topped "wall," and here assumes a trailing habit. And the sudden flight from a grassy tuft

of a meadow pipit arouses our hunting instincts, and with very little trouble we discover a late brood of stumpy-winged progeny.

By the time we have returned to the *Moorhen* the tide is ebbing. We lock up, and tumble into the punt, with just sufficient depth of water to float us out of our amateur-cut drain into the "George's deek," a naturally formed drain that a half-mile further on empties itself into the larger "Ship drain," which joins the main channel. A stranger had not better try to navigate Breydon alone! An old stager feels his way about at night with his oars! We are in no great hurry; and will drift leisurely downstream. The gulls yonder, at the flat margin, glisten white in the sun like a row of newly-dug flints: how oddly tall they appear by reflection in the stream: a novice might easily mistake them for spoonbills or storks: I have occasionally been deceived myself until my glasses have dispelled the illusion. They are resting after a hard-earnt breakfast.

What a number of little terns there are about. Last year we saw few, for "herring-syle" was scarce; the present season finds the waters teeming with myriads of the so-called "whitebait"; they flash like strips of burnished silver as they turn their brilliant sides to the sun in lightning capers. Dip! dip! dip! the terns are busily flinging themselves upon them, sometimes missing, at other times seizing the surface-swimming fry. It is pretty to see the old birds wheeling round to the flat whereon their shrill-squealing little ones flutter in eager anticipation. Each bird seems quite to know its own progeny, for you will notice half a dozen youngsters are passed ere the object of its solicitude is reached; or it may be only two, or eight may beg in vain. They must trust to their own careful parents. Sometimes the little herring is dropped on the mud, and the youngster has to pick it up, at others it is dropped with marked adroitness into the gaping mouth as the mother bird dashes by. I cannot distinguish either a feather or a semi-tone of difference in them, but parental instincts can. There are a few common terns, and maybe a couple of the Arctic species flying around. Our suspicions are correct, for we note the longer forked tail of the latter species. Far more matter of fact, not nearly so dainty, and far less attractive, several rooks are teaching their young, reared in an adjacent rookery, to prog for themselves. Occasionally a youngster still caws and flutters its wings in solicitation of a

titbit. It is a queer animal dietary the rook indulges in on the mud-flats!

We drift past a scattered flock of juvenile dunlins without the black breast-patch that their elders still retain; and a few wary ringed plovers flit to a safer location rather than trust us as their unsophisticated friends, the dunlins, did. A bunch of knots dash by, and now a trio of grey plovers, uttering their melancholy notes, hurry on to join them.

Half an hour after finds us at the boat shed turning the winch that hauls the punt into its haven. We have thoroughly enjoyed our trip into mud-land.

* * *

Breydon is not always so pleasant as we found it to-day, and yesterday. Even in August a gale sometimes breaks on us, when the hitherto calm channel surges like the sea, and the sea-birds beat up to wind'ard as in wintry days, screaming their annoyance; then there are days of sea-fog and mist, when the sky is grey, or piled up with a canopy of laden clouds, and the rain beats pitilessly down. In winter there are days of chilling storms, and ice in sharp winters drifts downstream in packs, bending and tearing out the huges stakes that mark the water-way. But under all its conditions and aspects there is always something weird, or charming, or fascinating to attract the lover of Nature; and it is just possible that when you are least expecting them you may see still rarer species than we have seen to-day—a black-tailed godwit, a Caspian tern, a phalarope or a goosander. Very early in September, 1906, a gunner fell in with four glossy ibises, just beyond gunshot. He vowed to return on the following day and get one, but he was disappointed again. However, thirteen ducks dropped in and afforded him an easy shot with his punt gun. He secured nine, which turned out to be the rare red-crested pochards.

XXXVII

VARYING FECUNDITY IN BIRDS

Why some eggs are all red, as the Kestrils; some only red at one end, as those of Kites and Buzzards? why some eggs are not Oval but Round, as those of fishes? etc., are problems, whose decisions would too much enlarge this discourse.—SIR THOMAS BROWNE.

I

THE ordinary bird's-nester, whether scientific or merely predatory, plunges greedy fingers into abnormal clutches of eggs, large or small, regarding only their suitability for his incomplete collection. He robs a nightingale of six eggs, a partridge of fifteen, without desiring or attempting to explain why the offspring of the one is numerically so superior. Some years ago, reviewing my season's "take" of eggs, I felt myself somewhat of a monster when I imagined the table on which my cases lay, as peopled with the developed embryos each shell had once contained—six nightingales, a dozen bullfinches, and so on; although I had never in my life taken more than one egg from the same nest. Consequently in abandoning egg-collection, I sought for a new interest in eggs to take its place. Without an interest in eggs—as distinct from birds—woodcraft must depreciate, since the finding of the actual nest would cease to be necessary. And the necessary interest gradually developed in the form of a desire to record and if possible explain variant clutches.

There are a few general principles it is well to keep in mind in pursuing this branch of bird-study. Such is the rule that birds do not merely breed so many times in the year to satisfy a periodical sexual desire, nor even to tickle parental instincts. Their nature would appear to be unsatisfied with any partial fulfilment of the propagating and rearing functions. It is young, not eggs, that they require in the first place; and in the second, they must bring a certain number of nestlings to maturity, if the fates and the season allow. Compare them with a domestic cat. The female may be perpetually running with a male. She accepts the consequent kittens in either a philosophic or maternal attitude, according to her temperament; but whatever her temperament, if the kittens are relentlessly drowned in their infancy, she will not kitten again for six months or so. The nightingale takes parentage far more seriously. Harry a nightingale's nest when the fledglings are almost ready to fly. The

bird does not sit down and ejaculate "Kismet," feebly awaiting the period of migration. She feels desolate without her young around her; either she has a superhuman sense of race duty, or else she desires the company of her offspring in the sunnier climes to which she will soon be hurrying. At any rate she immediately begins bustling about, and in a week she will have another nest in an apparently safer spot, even if the duties run her perilously near the date when her migratory instincts annually become clamorous. In a dell near Bristol one year I made the acquaintance of two separate pairs of nightingales nesting close together. A bird-stuffer from the neighbouring city had more than the usual cunning of his kind, if not more than usual greed, and he found and emptied both nests when the eggs were nearing the hatch. Both birds built second nests, and laid new clutches, and again he utterly despoiled them; but the third time they were too cunning for him, and safely reared the last nests. The young birds were so late in taking wing that all the nightingales I knew of in the surrounding country-side had apparently gone. Clearly—whatever the principle at the bottom of it—the birds were unsatisfied till they had young ones flying about them and strong on the wing; and to fulfil this desire they succeeded in resisting for a time their extraordinarily powerful instinct to migrate. There are a few further rules which are useful, and these may be stated more briefly.

(1) The effect of the breeding season is to maintain the numbers of each species at an equable level. Neither increase or decrease are met with, unless there is a notable change of conditions.

(2) By August the numbers of each species are at least treble what they were in April.

(3) These numbers are subsequently reduced to the normal, as follows:

(*a*) In the case of migratory species, curtailment is effected by the hardships and dangers of the two journeys.

(*b*) In the case of resident species, many succumb to extreme cold and exposure and starvation during the winter months.

(*c*) All bird flesh is heir to certain ills, accident, the preying of the carnivora, winged or footed, and at the hands of the gamekeeper, collector, and small boy bully. These losses, however, probably do not compare with (*a*) and (*b*).

The various species may now be considered in more particular detail.

1. FINCHES, PIPITS, BUNTINGS, and LARGER WARBLERS (such as the nightingale and blackcap warbler). Throughout the counties of England five is the usual average number of eggs for all of these birds to lay in a clutch. The migratory species certainly confine themselves to a single brood, provided they are not interfered with; but if they lose the first clutch, they quite as regularly proceed with a second and even a third, till they have added their quota of recruits to their species. Nearly all the finches annually rear a second clutch, even if the first has been brought to maturity, and should either first or second clutch be taken, they will go on to a third. This is rather difficult to verify, but very careful observations quite justify confident statement about it. Thus it would appear the migratory species of this arbitrarily designated class start the breeding season with the fixed intention of rearing five nestlings, and the resident species are equally ardent in pursuing a family of ten. Nor is it difficult to understand the laws at the back of these varying desires, at least in a rough outline. These small birds, migratory and resident alike, feed their young chiefly on various forms of insect life—flies, grubs, aphides, the smaller sorts of caterpillar, and the ova of these insects. This diet denotes search and pursuit on the part of its caterers, and in view of the quantity required, two parent birds would certainly be quite unequal to the task of catering for a larger brood than five; nor could a hen of this size well produce more than five eggs: if she did, she would take so long to do it, that the nestlings would show a large range of growth, and by dissensions in the nest, those latest hatched would never survive. Four is the usual clutch in districts where insect food is not abundant, and six is exceptionally rare even where food is most abundant, simply because the birds could not collect more of it. On the other hand, five is the minimum number a blackcap must produce if her species is to be maintained; her breeding season is curtailed by migration at both ends. She arrives exhausted by the arduous journey, and often finds herself too soon for the English spring, and has to face the expiring frosts of winter with a frame that has not been hardened by previous exposure; then when June is over, her young must be well-grown and hardened to face their first ocean passage. Thus a smaller clutch would not suffice the needs of the case, and a larger one is impossible. On the

other hand, the resident small birds—finches, buntings, and so forth—are in the best of health and spirits at the earliest limits of the breeding season. Winter has passed and hardened them, food is becoming abundant, the sunshine is lengthening, and they are full of health and spirits. Neither at the further end of the season are they hampered by the needs or anticipating of migration, and so a second brood is for them the simplest of possibilities. More than this, there seems to be need of a great number of them to serve as autumn scavengers, and to kill off the vast swarms of insects on the cultivated lands after the nesting time is ended, and with which the catering of encumbered parent birds is powerless to cope. Although the finches thus annually produce four or five times their own number, yet by the next spring each family of finches will usually have dwindled down again to a pair: for what the bird-catcher has spared the winter takes.

2. The Tits and the Wren.—These birds during the nesting season feed on a diet very similar to that preferred by the finches and warbler tribe, and they lay from six to twelve eggs in a clutch; I am convinced a second brood is abnormal with them, and rarely undertaken except when the first was despoiled. Still, taking into consideration the number of finches' nests that fall victims to the bird-nester, it is probable the tits rear more young in each summer than the finches do. The tits are never the prey of the bird-catcher who annually robs our woods and hedgerows of hundreds of thousands of finches (of which 75 per cent. die miserably in the first month of their captivity). Why then should the tits be so prolific? Their dangerous hour comes later than it does to the finches, but is more severe. The tit feeds mainly on insect food all the year round, and in the winter insect food is extremely scarce and difficult to obtain. I have occasionally watched the tits in my garden through a whole winter's day, and with the strongest glasses have failed to satisfy myself that they found a single morsel of food other than what I artificially provided, although I postponed my meal to them on those days to see how they progressed without it. More than this, since I gave special care to the feeding of the tits in the winter, the tits are certainly becoming far more common in the grounds, and we have eight or nine nests where we used only to have one or two. In a winter walk my terrier has found as many as a

score of dead tits, all terribly emaciated, and in some of the corpses the breast-bone seemed almost to have penetrated its scanty covering of skin. Again, eight young tits would require no more nutriment than five greedy young robins, and a tit can catch as many insects as a robin.

3. Smaller Warblers (chiff-chaffs, willow wrens, etc.).—Here again it is no more difficult to feed eight small warblers than five large ones, the appetites being less and the caterer equally agile. A wood-wren usually lays six or seven eggs; she can rear her family as easily as a redstart can rear five; and these tiny, delicate species succumb in far greater numbers during migration than their more stalwart relatives.

4. The Nightjar.—An unvarying clutch of two eggs is a challenge to any theorist; they are not always cock and hen, as the dove tribe are supposed to be in a natural condition; they are very voracious, and a larger number would be easily seen on the bare ground. But neither of these explanations is conclusive against an occasional singlet or three, which are so far unrecorded.

5. The Wryneck.—The clutch of these birds is nine. It has a huge advantage over other insectivorous birds because of its penchant for ants. An ant-hill once found, its catering is relieved both of search and pursuit, the two tiresome factors in the nursery demands of birds. I find that if an ant-hill is cut open for a pair of wrynecks, they cease to search the tree-trunks, for which their structure is adapted, and are quite eager to take all their supplies from the ground. This is a case in which a bird evidently reproduces itself as much as possible, as the wryneck will lay two or three times in a season if encouraged by robbery. I can conceive of no special dangers attending it, but in spite of its enormous reproduction, it becomes no commoner, so the dangers clearly exist—there is no over production among them. Some future savant may inform me that an ant diet induces cancer.

6. Doves and Pigeons.—From observations with both tamed and wild breeds I am convinced that the old idea contains more than sentiment. The young of a dove are almost invariably male and female, are both reared, and when reared, company together afterwards and mate the next season. The use of pigeon rings on nestlings in a wild state confirms this theory.

7. Plovers and most other Waders.—A peculiarly interesting

species. Building in so dangerous a position as the open ground, they face three difficulties, unless they are to become extinct :—

The number of young must be large.

The young must be able to run when hatched.

The egg must therefore be a very large one.

All these difficulties are so surmounted that the plover is not becoming extinct. To ask why it builds in such a silly place would be going back to first principles.

8. Crakes and Rails.—The nest of the crake is peculiarly difficult to find. If a farmer's objection can be openly or surreptitiously surmounted, every inch of the hay or cornfield has to be searched, for the bird's secret passage through the stems affords no clue. They are tolerably safe from biped or quadruped. Why, then, should the clutch be so large—seven to nine? Owing to the excellent cover of the crops, the young need not be large enough to really fend for themselves at birth, as must a nestling plover; consequently the eggs are small, and the hen can incubate a greater number. A large number are essential because the mowing destroys all late nests and many young birds, and there are the usual dangers of migration to be faced.

9. Game birds.—These species in England exist under very artificial conditions, fecundity being encouraged, and succeeded by slaughter. Several interesting points of knowledge stand out.

Where a game bird is allowed to revert to natural conditions of less danger, it promptly becomes less fecund in the course of a few generations. Before artificial fecundity was encouraged, the average clutch of "game" species was not nearly so numerous as it is now. The least persecuted member of the species—the ptarmigan—still has a small clutch.

10. Natatores.—The ordinary rules as applied above hold good with the birds of this section in general detail, while one or two classes present curious confirmations. The egg of the razor-bill and guillemot is always solitary, and so shaped that any motion imparted to it merely causes it to revolve with its taper end as a centre, so that no gust or blow can sweep it off the narrow ledge of rock where it is incubated. If there were more than one egg in a clutch, these gyrations would result in disaster, and a guillemot's breeding-place in a high wind would be a curious spectacle. Again, the largest clutches in this order of birds are those produced by the teal and wild duck, whose nests are peculiarly accessible

to many enemies, and who are specially liable to human molestations.

One great principle stands out clearly from these inquiries—that birds invariably reproduce their kind by an instinct of reproduction, and not as a mere necessary appendage to sexual intercourse. Any minor principles are more or less latent, and would repay deeper inquiry.

II

If it is established that all birds have a strong parental instinct, as distinguished from the purely sexual attraction, and that this parental instinct is so strong that neither eggs nor a callow youngster or so can satisfy it, but every pair labours on determinedly to raise the maximum number of matured youngsters, it remains to ascertain how and why the members of a single species differ in the extent of their fecundity. Not only do we find different normal clutches as between species and species, but we find varying clutches between different members of the same species, and that often in close neighbourhood. The accidents and conditions of locality would appear to be the determining factor, some districts being suited to the successful rearing of a large brood, and others adverse to a particular species maturing even a small one. Accidents of locality appear to react on avine fecundity with extreme rapidity, as might be expected when generations are counted by years. Where a locality changes its character from rural to suburban or urban in a few years, for instance, we do not find the birds that formerly laid large clutches in it continuing to lay large clutches; but on the contrary we find them within three years accommodating the number of their eggs to the food supply. This accommodation cannot of course be deliberate in the parents, but must be due to impoverished physical condition. They are less well nourished as a district once adapted to their habits and needs ceases to be so adapted; and a greater expenditure of labour becomes necessary to procure what food is obtainable; and so they have a smaller store of physical strength, and much of it is exhausted in the work that comes before nesting.

The possibility, and later the certainty, of these differences, and their origin, was early brought under my notice, seeing that for several years I resided for alternate periods in the bleak and smoky outskirts of a northern manufacturing town, and on the edge of some of the richest land in the fertile western counties. Orni-

thological authorities informed me, for instance, that a hedge-sparrow laid from four to six eggs in a clutch. Yet near my northern home I never found a larger clutch than two; and so scant was the insect life of the neighbourhood that a year would occasionally pass without my discovering a single nest of the species. My note-books record many clutches of two eggs, and a friend's voluminous diary can only furnish three nests in excess of that number during a continuous residence of twelve years in the same district. In Gloucestershire, on the contrary, I have no recorded clutch of less than five, and six was so common that it excited no wonder. In Lancashire the lingering winter of a northern latitude, combined with a foul and smoke-polluted atmosphere and the absence of plant-life, rendered insects nowhere abundant. In most English localities, if a pair of resident birds are seen frequenting the hedgerows late in March, they will stay to breed, but often in Lancashire a pair of birds that have wandered thither in the winter grow weary of awaiting a tardy spring, and realize that the supply of food on which they have contrived to support themselves will be quite inadequate for the demands of the nesting season; and so just when you look for them to nest, they disappear elsewhere. Some agency in the bird world brings them news of lovely nesting weather in Cheshire and Derbyshire, or else they migrate in sheer despair. At any rate March's promise of an increased avi-fauna too often brings but regrets in May. And even when a few insectivorous birds had the hardihood to remain, their clutches were invariably very small, clearly evidencing the poor condition of the parents and the sparseness of the food supply. Contrast the Bristol district, for instance, in which I have often found six hedge-sparrows' nests each containing five or more eggs, within the confines of a single meadow, the hedges of which also sheltered robins and chiff-chaffs and whitethroats, all catering for hungry families on very similar lines, and each with a full complement.

Again, the standard authorities assert that a sand-martin is accustomed to lay from four to six eggs in its solitary clutch year by year. In the south and west this rule seems justified, five being the commonest number, and four being distinctly exceptional. I found a colony of martins in Lancashire. It was a miniature amphitheatre of oozing clay, its lofty sides dotted by Irishmen wielding spades and daily encroaching further on the plateau of meadow-land

above; at the bottom a loathsome clay-pool, slimy-brown and forbidding, destitute of reed or flag. One side of the clay bank ended abruptly in a sand wall, and here the martins found a home. The birds flitted over the clay-pool, actually struggling together for each rising fly, and at sunset they renewed their competition on the meadow above. The land was too poor to breed flies, and furnished only the tiny moths which slept by day among the blades and grass roots. There were seventeen martins' nests in the sand wall, and not one of them contained more than three eggs or young, several of them only holding two. Contrasting with this haunt, below any shelving sand bank on a southern stream the martins may be seen to flit careless of each other's prey. The warmer temperature and the plenteous vegetation in the stream bed render insect food abundant, so that every tunnel in the wall's face will give five or six young martins to the light before September comes round.

It is a long step from the sand-martin to the sparrow-hawk, but the same thing holds true. One summer two hawks' nests were visited, the only known ones in a well-wooded region, and situated about three miles apart. Each contained the magnificent clutch of seven eggs—and no handsomer spectacle than a large clutch of well-marked sparrow-hawk's eggs can ever greet the eyes of a naturalist. The keeper was the sort of man to be trusted with the news of such a discovery, but he evinced no surprise. The landowner desired to protect his coverts, but at the same time he delighted now and then to see a stately bird in mid-air. Consequently the keeper's orders were to shoot all the kestrels; never to shoot a sparrow-hawk, but to destroy all the hawks' nests and to lime the old birds at all the nests except those in two outlying woods, where a few pairs were to be suffered to nest in peace. These orders had now been in force for some ten years, and the kestrel had ceased to nest on the estate, though now and then one fell to the gun; there were three or four pairs of sparrow-hawks nesting on the edge of the coverts, and the clutches had noticeably increased ever since this policy had been followed. The keepers often found clutches of six, and several of seven eggs had recently been recorded. This certainly points to the conclusion that increased scope for foraging has an immediate and marked effect on fecundity.

The yellowhammer is another excel-

RAGWORT.

From a photograph by
Keighley.

lent example. Some years ago a few well-known naturalists, whose experience was largely confined to single districts fell foul of each other in the columns of a natural history journal. One who lived in Ayrshire asserted that the yellowhammer never laid more than three eggs in a nest, and that all the books were in error in crediting it with five or more. His country consisted chiefly of sheep-farming land, alternating between rather thin, close-cropped grazing ground and furze-clad moors, foliage and herbage being nowhere abundant. In the West of England statistics showed that a clutch of five was normal, while in the Midlands again four was far commoner than either five or three. It is thus evident that the "three to six" of the natural histories does not record a varying energy or power of production in each individual pair, so much as the influence local conditions exercise on the range of natural powers.

On broader lines, the larger clutches with which each species is generally credited by naturalists may be expected in southern counties, and the smaller number is normal in the bleaker north. I know of no bird common in both north and south which is more productive in the north. Occasionally a day spent in abnormally rich country will provide examples of the biggest clutches ever recorded in the case of every species of which a clutch is encountered. Some parts of Somersetshire thoroughly illustrate this assertion. An afternoon on a large plain in that county, moist, loamy, dark-soiled earth, intersected by numerous rhines and luxuriant hedgerows, yielded a nest of nearly every species indigenous to the county, and all were cram-full of eggs. Nearly every nest we examined contained the maximum clutch which the authorities allow to each bird, and in one or two cases the legitimate number was exceeded, as by a whinchat, which I found incubating no less than seven eggs. Indeed a friend remarked that all the birds had passed their prescribed maximum, with the solitary exception of a miserable cushie, who had been content to deposit her regulation couple.

All these tendencies are seen strongly marked when domestication gives any species the certainty of ample nourishment for as many young as it cares to rear. The fecundity of pheasants and partridges and turkeys in semi-captivity is many times in excess of their capabilities in a state of nature, and is gradually being accompanied by a growing reluctance to incubate. The little finch now known as the domestic

canary is an excellent instance, as she will lay fifty eggs in a season if encouraged, and as often as not refuse to sit on one of them. And finally a number of poultry fanciers are labouring to produce a domestic hen which shall lay an egg every morning. Thus it is clear that birds have an immeasurably powerful reproductive instinct, which is separate from the sexual intercourse, and appears most clearly so in the case of the barndoor fowl, which calmly continues to lay barren eggs when she has not interviewed a male of her species for many weeks.

XXXVIII

SPORT, AND WILD LIFE

"I have determined to keep my hands free from extermination."—JOHN COLQUHOUN.

OUR forefathers were hunters. They hunted for food, for safety, for the love of adventure. They went out to kill, or to be killed; when the one was almost as likely as the other. They staked a life against a life, which seems to be the only valid reason why life should be taken. Half the zest of pursuit is in the stake. The strain is in their descendants. We are of hunting ancestry. The habit has become an instinct: slumbering only for lack of opportunity. In part, covered under other pursuits: or in disguise. Trade is a form of hunting, honourably, or dishonourably pursued as the case may be, with some of the excitement of the chase. Such was the phase of barbarism.

In an era of chivalry, sport was born out of hunting. Lest it might seem to be butchery, it was guarded round by laws "Thou shalts, and thou shalt nots." And, by sentiments, these unwritten laws, which are ever the more binding. Laws are for the common man: sentiments are at the making of a gentleman. The sportsman raised the wild creature nearer to his own level, gave it certain almost human rights; and made a compact, to hunt together on, as nearly as possible, equal terms. So was formed a manner of round table, and those who sat thereat were under certain knightly vows.

Laws were to be simply interpreted, and strictly observed. Nor were any of the safeguards to be tampered with. There was to be no disturbance of the balance; no despoiling of the land. Nothing was to be done to make the approach more easy, the quarry less suspicious. That were an evasion, the

meanest form of law breaking. Men were to go forth into the natural lists, against opponents, with all their wits sharpened by the need of daily watchfulness against natural enemies. The truly wild animal was at once the charm and the boast of ancient sport.

In the age neither of barbarism nor chivalry does woman seem to have shared in the pursuit of wild creatures. Even the ancient hunter had a rude sense of fitness. However roughly, on occasion, he may have treated his mate, he kept her on such gentler side of things as was then possible. The birth of chivalry was the conception of woman as something apart, whose virtues had nothing akin with the rude shock of tournament, or of the chase.

This may account for the absence of true sporting instincts, now that woman has taken to the field. Whether she has benefited by the change is not yet very clear. What is clear, is that she has put an end to the beneficent era she inaugurated. Chivalry has passed. Its spirit is dead. We may laugh, but possibly we shall lose. Once, man could do no mean thing because woman was by. Now he may not feel the restraint. The spell is broken, by which the rudest ongoings "were touched, were turned to finest air." The knightlier treatment of wild animals seems to have been an offshoot of chivalry. They at least have suffered by the change. The death of sentiment has shaded their lot. The unwritten laws are no longer in force. Since woman broke with the traditions, and went forth with man into the field, all this has come about. The coincidence is singular.

Sport is healthful; nor will anything said against it alter this. It freshened and rippled the stagnant surface of country life. It led to the covert and the moor, steps which would have found less breezy and pleasant ways. All the love of outdoor life is the gift of sport. The flavours were wild. The spread table was instinct with charm and gaiety, suggestion and incident, tale and drama. The spirit has on the whole been beneficent. But for sport the life of the wilds would have passed unnoted: its claims unacknowledged. Nor would the comradeship with man, so good for both, have been in existence. Of all critics, I have least patience with those who have no natural care for the creatures they throw their clumsy aegis over. Save at the dinner table, where they consume them with great gusto.

The ethics of the field leavened the

relations of landlord and tenant. A sporting instinct was brought into play. Better is this, than a hard-and-fast understanding, set down in legal phrase, and meant to be observed to the letter, and the day. Inasmuch, as a contempt for meanness is better than much precept. Space and law were not denied. A little more than was in the bond : a share of the game at a big shooting : a little off the rent in a bad season. Hard dealing, taking advantage, turning adrift, worrying without giving a chance, were not common. Instead of which were a certain kindly understanding, and neighbourly deeds : doing as one would be done by. Not because of any maukish sentiment, but from kindly fellowship. I should be sorry indeed to think that sport was dying : it is in the interests of all to see that it does not die. We might spare a few codes and be all the freer and little the worse ; but a ready and breezy field morality we cannot well spare.

The olden sportsman was much abroad, saw the wild creatures in all the phases of their lives, surprised them in many moods, met them at tangled corners. At one time or other, he was present at the dramas of the wilds. The fox prowled around the jugging partridges. He held no brief for either. Both were guests on his property; and he, their host, exercised an olden hospitality. If a thinker, he saw an advantage to the partridge as well as to the fox. In any case, he found the interest to overpay the possible loss.

This out-of-door life, the familiarity with wild creatures, these daily incidents gave much to tell over an evening's pipe; for those who cared to use the pen—much to write. From this source, in Scotland at least, the naturalist appeared. Sometimes in the figure following the dogs up the hill-side ; sometimes in the angler stooping, and dreaming over the current. Often, in one who was a haunter alike of stream and moor. Therefore the robuster naturalism of the north, brought into being, and freshened into vigour during days spent out with the rod and the gun.

There is a spawn of egg and skin collectors, who have appropriated the name of naturalist. In the interest of some private hoard, or public museum, men go about doing all the mischief they can, and bribing gamekeepers to help them. Such naturalism is not robust. In it is no chivalry, no fair play, no understanding with the wild creatures. Only a certain sneaking around, only a getting over the walls,

only a watching from some dark place, and robbing when no one is looking. To such we owe the uncertain tenure of the osprey on our lakes, the thinning out of the kingfishers on our streams, and the tenuity of other forms. It were well that the possession of rare eggs should be more strictly accounted for; and museums should no longer be the chartered receivers of stolen goods. By his acts, one great sportsman-naturalist gave countenance to this brood, whom, at the same time, he despised. It was as the naturalist and not as the sportsman that he offended "Peccavi," he confessed.

Virile, chivalrous, and charming was the sport of seventy years ago: its sanctions, the unwritten laws so binding on a gentleman. Each sportsman was jealous of its honour and privileges; impatient of its degradation. He loved the birds, alive or dead: and thought one who did not, a butcher or a gunner: he did not see the difference: neither do I. He looked askance at the parvenu without traditions or natural affections. Sport, he sought for its own sake, and was satisfied with its returns in spiritual currency.

Greed, boastfulness, and all unknightly things crept in. Traditions passed. The forms remained indeed; but, what was kept in the letter was broken in the spirit. The space and law which were agreed upon, as though the animals had sat in council, were cancelled by the marksmanship of the pigeon trap, with guns of greater precision and rapidity of action. A state of things, which could only be fair if it were balanced by some further privilege or concessions. How far that is from being the case, we shall see by-and-by. No longer was the pursuit a thing apart. It touched not its devotees to higher issues. It professed no chivalry as it reckoned up the day's kill. It is not too much to say that it ceased to be sport and became shooting. The puff of smoke on the hillside lost its glamour, and thinly veiled but for a moment an unhallowed deed. It demoralized even the quarry: for there is such a thing. The pact while it lasted gave a morale to game: partly reflected it may be, appealing to the imagination: but no less a feature in the situation.

Instead of the breezy and chivalrous traditions of the field being carried into the relations of common life, the moods and calculations of the city were practised in the field. To get as large a bag as possible, however filled, was the new commercial ideal. "Give the beggars a chance of course, but hang it all, we must have numbers."

How far the death of the sporting element has altered the relations of landlord and tenant, of master and workman, were hard to say. But a man who lays the fences between sport and slaughter deserves only such tenants and servants as are well able to look after themselves: and this is what he is getting. A society based on the morals of sport as at present understood, would be hastening to dissolution.

Nor, was it enough to have power of destruction never dreamt of when the first rules were framed. All rivals must be killed out. Once was little talk of rivals. Nor was the word vermin applied to charming creatures. The balance was, as yet, practically undisturbed. The wilds were alive and interesting in varied forms of life. The animals lived together in concord, or preyed on one another, seeing they were not made alike. They had to live somehow: therein lay much of the interest, and all of the drama. And no harm was done, but only good.

The eating of a game bird disturbed the commercial calculations. It meant one less for the bag, and must in no wise be permitted. To such vile issue had the pursuit come. It was a stirring episode, but that made no appeal to the undetached and inartistic eye. It was an interesting object lesson in the ways of nature; but the olden naturalist was gone, who suspended his step between rise and fall, amid bracken and undergrowth. It was so much pure sport, no longer understood in an unsporting age. No use pointing out the short-sightedness of the policy: telling that it was blundering, and that such a blunder was worse than a crime. The new gunner is no philosopher: has no patience with refinements. The order went forth to clear the land of vermin, and the land was cleared.

Form after form vanished. "Am I to harbour the destroyer of my property." This was no longer the olden host, who did the honours for all his guests alike. The names tell the story of the ignorant slaughter: the utter want of taste or conscience, or sense of responsibility. The wild cat went. In its trail followed the polecat, and the marten. If others were only depleted, it was from no want of diligence on the part of the hirelings. The falcons, down to the tiny merlin, were on the Index purgatorus. Slay them.

Such is the modern inquisition whose torture chamber is the trap, whose ready argument is the game-

keeper's gun. Such are the mole-eyed priests in the service of Moloch, who prevail, because they are stronger, and deserve like measure if they were weaker. Men who deny freedom, and take life; and who would clear field and woodland, and breezy hill slopes of all save themselves and their prey. Why should beauty pass because men are blinded by self-interest; or lights be put out by lovers of darkness; and the heritage of all be bought up by a few full purses. We are a long-suffering and, to tell the whole truth, a somewhat stupid people, who need a rough shaking up.

And this is sport. This destruction of kindly relations, this breaking of early contracts, which ought to be revised, this gloating over advantages. To stalk into the wild garden of the land, where charming forms, from all time, have been free to live and follow their instincts, and turn it into a shambles, that shooting may be easier and results more certain. And they are sportsmen who forget so much, and do such things. Who make sport—naturally so bright and charming—hateful.

Nor does the evil stop with the killing out of creatures of prey, so much more interesting than their human rivals. Something follows; of such sheer necessity that even a child might have foreseen it. The baleful influence is even more apparent in the forms which are spared. Possibly, this is not a surprise to those who brought it about; but they are alone in their satisfaction. Sport found its quarry wild and wary, alert and hard to approach. In this shyness and aloofness is the charm of wild life. At any moment a shadow with a hooked bill might fall from overhead; or the rustle of an approaching enemy might sound on the dry heather or in the undergrowth. The fear passes with the cause of it. In the absence of enemies, watchfulness is remitted. In ceasing to be wary, the creature ceases to be wild.

Protection is only another name for taming. It is on the way to domestication. And the pursuit approaches a raid on the farmyard. On both sides, is our wild life being blotted out: the butchery of the greater mammals and birds of prey, and the taming of the rest. A spirited bird would rather be killed, with all its wild instincts at play. I have no quarrel with grouse, poor things: it is not their fault. Only they are of little further account to any; except the traders who go out on the twelfth of August. Those who care

for wild creatures find a greater if sadder interest in the remnants of vanishing species, or even the memory of those which have gone, than stocked moors.

Alexander is said to have sighed for another world to conquer. So it is with many who are not Alexanders. For a while sport confined itself to certain orthodox forms. Since the matter had gone too far for remedy, and there was no help for it, we were almost content to hand these over, and score them out from our list of wild life. Of late there has been a fresh outbreak, an extension of the blighted domain. To a certain type of mind, of which the sportsman seems to have the monopoly, domestication has quite a fascination. Every art is being used to tame those creatures, which by reason of their nomadic habits, and greater range of freedom of movement, are classed as "Wild fowl." The many wonderful things these hitherto irresponsible creatures may be taught to do; the docility with which they will answer a call, and come to the gun might make the canary trainer at the country fair quite jealous. The difficulty may soon be to get them to behave with any reasonable amount of wildness.

There is a possible excess of familiarity, which would give away the show.

In my hearing, the other day, a sportsman was telling how very much simpler woodcock shooting had become since the olden days, when it was a matter of groping, and chance, and possible empty bags. He might have been talking of one of those modern advances by which the forces of nature are brought under the control of man. It was the first time it had struck me to regard the wild instincts in that light: or to class those persons who are making the experiments in the noble army to whom we owe so large a debt. Even if it were a desirable thing to say to the bird—come, and it cometh, I should still feel that quite another order of persons should take to woodcock taming.

The wild duck, whose flight we associate with the thickening of the twilight, the salt spray along the sea-coast, the gleam of the estuary, is among the examples of modern conquest. "It is ridiculously easy, sir. You can make them do practically what you like." If you try to convict of ingenuity misapplied; if you hint that these are among the creatures whose main interest is in that they are wild, and therefore should be let alone; the answer is conveyed in a stolid stare.

WIDGEON.

From a water-colour by
Frank Southgate, R.B.A.

Where the matter will end is rather difficult to say. Fifty years will probably see the last of all that deserves the name of wild life. Further taming will do away with the need of any distinction between barnyard and the surrounding country. Half the time may be trusted to make an end of what remains of sport. Even the new sportsman may tire of his make-believe, unless outsiders recognize a certain interest in what is going on and make some protest. Only they will have to be very quick now, otherwise they may as well sleep on. From what is said of the modern interest in nature, one would assume some signs of awakening. It may be all talk, all superficial reading, out of which nothing will come.

XXXIX

EXMOOR

> "Bees that soar for bloom
> High as the highest peak of Furness Fells,
> Will murmur by the hour in foxglove bells."
>
> —Wordsworth.

THERE are mixed in the West Country certain qualities of scenery not often found united. Exmoor and Dartmoor with their great barren and exposed uplands, and the rugged Cornish coastline, projected far out into the Atlantic and lashed by enormous breakers, are features of sternness and grandeur. They dominate the country. You are never far from cliff or moor and the feeling of wildness that clings to them. But, on the other hand, you are never far either from associations of an exactly different kind. The valleys and combes that wind down from the moors, and lead the streams collected among their misty plateaux into the low country, are full of a rich vegetation which never all through the summer loses its emerald green, while the milk and cream in the farm dairies are a proof to all visitors of its quality. The farms themselves, with their straggling outbuildings, are half drowned in a foam of apple blossom, and almost every cottage is covered and half obliterated by a load of honeysuckle and roses.

And it is the same along the coast.

The fishing villages that listen all day to the Atlantic swell are steeped in a tangle of blossom and verdure. The fuchsias climb to the roofs and myrtles luxuriate in the moist west wind. You open up, if you are coasting, these little Edens tucked into cracks and crevices of gaunt cliffs that have sent many a stout ship to the bottom. The difference between them and their surroundings seems the difference between southern warmth and northern bleakness, and the fishermen who get their living out of this stormy sea put in at night to homes and havens that remind one of olive-shaded Sorrento or the vine-trellised slopes of Amalfi.

This combination of a framework and setting of great strength and ruggedness, filled in with detail of a warm and rich fertility, constitutes what one may call the note, I think, of West Country scenery, and I daresay has not been without its effect on West Country character.

It is the consciousness of this mingling of influences that lends such a charm to a ramble up one of the slowly ascending valleys which penetrate Exmoor from the south. I know no walks in England more lovely than those which unravel the windings of the Exe or Barle, where they shine in clear pools, shaded by gnarled oak branches and bordered with tufts of branching fern, or gush in foaming cascades between rocks fleeced with damp moss. Through these secret ravines, full of the stir of summer foliage and the inarticulate murmur of water, you slowly ascend, while the wildness of the scenery increases and more closely envelops you and the orchards and strips of pasture bordering the river, where you walked knee-deep in grass, diminish and at last cease, and clumps of furze and bracken and heath overspread the hill-sides, and the covert grows shaggier and the way rougher, until at last you emerge on to the great bare sweeps of heather and the stream at your feet becomes a moorland burn, and the way you have come by stretches behind you, a narrowing and winding estuary of green woodland pushed far in among the dark curves of the moor.

Thus to climb up from valley to moor is to change a scenery, a climate, and a whole environment of influence and suggestion for its exact opposite. In a half-hour you have passed from a nature all softness and gentleness to a nature all toughness and sternness. There is about these bold slopes of heather, where the plough has never been and man has made no mark, a sense of

primitive, savage vigour which the fat fields down yonder are strangers to. Instead of the plump song-birds of the valley, with manners tamed and notes sweetened by garden currant bushes and strawberry beds, the curlew, wandering through space, utters the melancholy cry which seems the very voice of this wild landscape, or the blackcock darts off on its bullet-like flight which no gale can turn or distance tire. The lurching, easy gallop of the red-deer bears in its very motion the suggestion of these large expanses; the hardihood of the half-wild ponies testifies to the grit and stubbornness necessary to preserve life under the conditions here present; the few stunted thorns and beeches, growing lopsidedly, their branches strung out to leeward, as locks of weed are strung out in a current of water, record, like so many steady weathercocks, the force of old gales.

I do not know why man should be less susceptible than bird and beast and tree to these influences, and I have often thought that the moor has gradually impressed itself until it counts for something in the native character. You easily note the geniality, the hospitable ways, the innate kindliness, which finds voice in the soft and rounded, quaintly Venetian, Devonshire dialect. But people find out more slowly the toughness and tenacity that underlie these softer qualities. Yet they, too, are there.

You must stand on a height where a far-stretching view of its blue ridges can be obtained to gain an idea of the size and character of Exmoor. Properly speaking it is not so much a moor as a collection of many moors; or rather it possesses one large central tract, and all round from this lesser spurs and ridges protrude, sometimes altogether cut off by cultivated land and fertile valleys and rising like blue islands out of the varied landscape, sometimes joined still to the main area by a lofty ridge though almost surrounded by fields and hedgerows. It is these outlying spurs and annexes of the moor that carry its influence far. Living in the low country itself, amid the fertile and rich foregrounds, you scarcely realize the presence of the few purple, lonely summits. But when you climb to a top a change comes over the scenery and these summits possess the landscape. The cultivated hollows and intermediate valleys then sink out of sight. Ridge calls to ridge. Their great backs, like the backs of whales, repose curve beyond curve, carrying the eye on into the blue and misty distance; and in a new way, perhaps,

you realize the magnitude and dominating influence of this great natural feature.

So, for the first time as it happened, I looked out over the moor only a few days ago from the top of Dunkery Beacon. Although familiar with it as one who lives in the neighbourhood I had never, that I remember, climbed this, its loftiest eminence, before. Its rise, save indeed from the northern side, is slow and gradual, slanting in long and easy ascent to the little dot of a cairn at the top. Though on a comparatively small scale it is in shape and presence curiously like Etna. It tells, like Etna, by smooth and passive bulk, and, like Etna, creates its own solitude as you ascend. Like Etna, too, it astonishes you by the height to which without apparent effort it has raised you. The heather that day was in full, perfect bloom. Every step let loose a cloud of dusty pollen and filled the air with sweet scent. The white sunbonnets of whortleberry pickers dotted the slope, and my own fingers were purple-stained before I had gone a quarter of the way up.

On all sides but the north, where the ground breaks steeply down to the rich meadows of Timberscombe and the cliffs of the coast, the eye, from this height, follows the long smooth lines of the moor into the uttermost distance. There is no other line like it in Nature. Clear, firm and sweeping, like the line of a great draughtsman, it declares itself even in the dim distance amid the composite, petty forms of Nature's usual features. I looked at the blue ridges with a sense of their magnitude, of their compass and far-reaching influence, which, though I had lived in their presence, I never remember to have felt before. I saw, and was surprised to see, how completely the severity and gauntness of the moor ruled the landscape; how little the valleys counted for.

I had that day bicycled up the long Exe Valley from Dulverton, and, familiar as the way was to me, had been brought to a stop again and again by the views it disclosed. Contracting and again expanding the valley opens itself into a succession of little green arenas, carpeted with grass and shut in by the lofty curve of great woods so steeply that the cast shadows stay there half through the day. The dewy, fresh, crisp grass reminded me of the Swiss pastures reaching down to Lucerne, wetted with trailing mountain mist and shot with the delicate purple of crocuses. Here, too, the hedgerows were a

tangle of flowers and the carry-gutters, loaded with loosestrife and willow-herb and tufts of fragrant meadow-sweet, made lines and chequers of coloured blossom on the bright green of the grass. These brilliant little foregrounds, held in the curved arm of the river, were made more secluded and more lonely by the steep hills and shaggy woods that gird them in. You left or entered them, as the opposite hills approached or receded from each other, almost as by the opening and shutting of a door, and each reluctant backward glance was followed by a forward one of fresh pleasure.

But of what effect is this beautiful valley, with its meadows and woods, that it took me hours to pass through, where a man might pass weeks of his life—of what effect is it all in the panorama I now have at my feet ? Just a corner I can indeed make out, a recess of woodland under the angle of a steep hill, no more than a square inch, so to speak, of the great map before me, which I know belongs to my route and is a glimpse into that valley which an hour ago seemed all the world to me. The rest is hidden and does not count. And how many scores of other valleys, similar in richness and beauty, are hidden likewise by those great, calmly dominant, smooth-curved hills that keep watch and ward over the landscape ?

It so happens that a good many years ago I came upon a verse or two written in a note book, evidently by a lover of the West Country, and I am tempted to insert them here, not that they have any particular merit, for they are scarcely intended as poetry, but because they, too, try and express that contrast of softness and ruggedness which I have suggested as the note of our West Country scenery. The river Lyn runs not far from Dunkery, northward through a dense oak covert till it enters the Bristol Channel at Lynmouth. The verses are as follows :—

" When I had walked for many hours up the twisting valley,
Following your secret course, river Lyn, through the woods ;
When I had often stood in the bracken, with the angular boughs meeting above me,
And listened to the bubble and gurgle of the water and the softer whisper of the summer wind,
And leaned my shoulder against the mossy rocks, and looked into your golden depths, Lyn,
And watched the sparks of bubble breaking in the black shadows :
Then I thought that I could always be happy here,
That the joy of the valley left nothing to be desired.
But when later I had left it and climbed the steep path leading to the moor ;
When I stood at last on the forehead of the mountain,
Poised on the slope alone, the wind singing between my teeth,

Vigilant and alert, cruel-eyed, looking out like a cormorant seaward:
Then, indeed, I rebuked the tame fancy that had possessed me:
Then I knew that the joy of the mountain was greater than the joy of the valley,
And then and there I once more vowed allegiance to freedom,
Allegiance to my roving life."

It would be difficult to say which is the greater of the two influences, but certainly they are different, and together they make up the West. I could not, that day, from the top of Dunkery make out Dartmoor's answering outlines in the sky to the south. But long before one leaves Exmoor those outlines can be distinguished, and, gaunter even and more far reaching, they carry the moor's influence far away to Plymouth and the southern coast.

With that encouragement to far gazing which a great view gives, I took up their course. I watched the melancholy wastes and salient tors of Dartmoor spread south and west. I saw the genial red of the Devon cliffs turn to grey granite as the need arises of withstanding Atlantic breakers, and the great pale cliffs, with Mevagissey, Polperro, and many another quaint fishing hamlet tucked in their rough embrace, and followed the coast along to its furthest jutting headland, where even on a summer day like this the slow swell bursts in thunder on the cliff-face.

Thence I turned north along the yet sterner Cornish west coast, past Moorwinstow, where Hawker's memory guards a hundred legends, grim or fantastic, of that wild country and those fatal rocks; and so I rounded the corner at Hartland and came back by towering Gallantry Bower and the colour and blossom of little Clovelley and Ilfracombe where the tourists go, and the line of curt-edged precipices that bound the moor, until at last my bodily eyes looked down upon the sheen of the sea outside Porlock Weir and Dunster, glittering down yonder at my feet.

Seen from such a vantage point all this south-west promontory of England presents itself to the spectator as a whole. He sees the robust and virile traits of it dominating its softer aspects, emerging into prominence and authority, and giving character to the whole tract. And in much the same way if he looks broadly at the record of the West Country and its people he will note a spirit of adventurousness and robust daring running through it, at variance with its supposed easy-going and somewhat sleepy character. It is this that has marked history. The men who for a century carried on a personal and private war with Spain, who set forth in their little ships in ones and

twos from western fishing hamlets to watch the Carribbean Sea for ingot-laden galleons, or raid the main and loot Spanish settlements; the men who started English colonizing off their own bat; who hung, fierce and indomitable, on the skirts of the Armada until the great fleet went to pieces under the strain, these men were not slow to move, soft and sluggish as it is rather the custom to paint West Country folk. I do not know that they have changed much. When, on that fateful sixth of January, the word was given and the Devons rushed through hail and lightning to the attack that saved Ladysmith it was something more, I imagine, than a bucolic good-nature that backed their bayonets.

Take the general view of the men and their doings and the stauncher, sterner elements come out in them, just as they come out in the scenery as from Dunkery you cast a bird's-eye glance over it.

Fifty years ago or less these influences that I have been attempting to describe were visible enough in the manners and character of a kind of local West Country aristocracy in which they had culminated. Modern progress with its disintegrating tendencies, came very slowly up this way, and the western gentry lived on in close touch with their neighbours, part and parcel of the local life, long after their kind had, in most parts of England, broken such ties. Of old families, they were destitute of that kind of breeding which results from the association of a number of people devoted to the art of self-amusement. Their manners were the manners of the countryside, rather than of a class apart. They spoke the Devonshire tongue, and were representatives of the sports and interests indigenous to the country. All of them kept open house, and most of them kept hounds. They were all as like as peas, and their unfailing characteristics were an unfailing geniality and good humour combined with an extraordinary toughness and endurance. Their hospitality was only equalled by their boundless capacity for galloping.

The record of many a hard sportsman of those rollicking days still feebly survives in local anecdote; but one among them is lifted into more general recognition. The fame of Jack Russell is the fame that belongs to a type. He had in him, and both at their best, the sweetness and toughness of the West. One could fill a book with the stories told of him illustrating both; stories of how the very gypsies counted on his kindness and protection, and

how these wanderers and petty pilferers used to keep guard over his poultry yard; and on one occasion at least, when the presence of a gang of burglars was suspected, patrolled around his house all night, unknown to him, to secure it from attack. Stories, again, of the times he has ridden the fifty miles from Iddesleigh to Four Hole Cross on the Bodmin Moors on his way to the west in the dark of a winter morning, and after hunting all day ridden home again by starlight; or of his ride from Delamore seventy miles home across the moor on the last of six consecutive days' hunting, he being then in his seventy-ninth year. There is no end to such tales.

Add, I say, these different kinds of anecdotes together and you have the reason of Jack Russell's fame. Nothing in any sense great or really noteworthy is recorded of the man. He was simply a very kind-hearted, very tough-bodied fox-hunting parson. All the same, he was the figure-head of a big bit of England. Any one who had knowledge of the West could recognize, broadcast, the Jack Russell traits. To this day, not so much among the gentry, but among the peasants and farmers and fishermen, those traits are to be recognized. Any day out with the Devon and Somerset the observant stranger shall note a score or two of yeomen and farmers, robust and thick-set, of an infinite solidity, and with just the same confirmed toughness and power of endurance that all the products of the moor have. They are of one stuff, these yeomen, with the deep-chested kindly fisherfolk of the coast hamlets, who, as I have said, spend their time between Atlantic surges and fuchsia-covered cottages, and experience Nature's buffets and rewards turn and turn about.

The next time the reader goes down to that country—to those cliffs and hamlets, and roses and rocks, and wild moors and green valleys—let him take with him the thought of the blending of these opposite characteristics of sweetness and toughness. Let him look at the country and talk to the people with that thought in his mind, and he will find, I think, that he holds a clue to much of the meaning latent in West Country scenery and character.

A NORTHERN VALLEY.

From a photograph by
Alex. Keighley

XL

A NORTHERN VALLEY

"Do our woods
And winds and ponds cover more quiet woods,
More shining winds, more star-glimmering ponds? . . .
Is Eden out of time and out of space?"

—W. B. YEATS.

THE seven miles of valley between the mountains and the sea develop and abandon many characters. On one hand the limiting hills are ridged with long terraces of creviced limestone above an iron-stained soil; the hills opposed are craggy with slate-rock on their higher slopes, while the fields of the valley have many ample knolls where boulders of slate jut amid a crown of oaks or sweeping beeches. In March the crumbling soil of the lower slopes darkens to the plough, but becomes grey again in the first East wind.

The shore is that of a wide sandy bay where shallow tides fill and empty with brief broad flingings: low hills surround it, and pool-pierced marshes are its border. These long marshes of the bay always bear sea-pinks that rustle, dry blossoms whose season it is difficult to know because salt makes grey their first hint of rose and a last touch of dubious rose lingers in the dead blossoms the salt preserves; its only other flowers are grey also, the small pearly bones of rats drowned by the Spring tides—but these may be known quickly, for they never rustle.

The mountains are unaware of the sea: even a Winter sun stirs a scent to betray their hidden thyme-beds, and the wind's savour of salt is overcome. Where these steep dark mountains begin a lake lies among meadows: in the silence before an August dawn a strong swimmer has dropped into the dark water, that lapped against his pale loins, to reach water-lilies in a small calm bay; the flowers rocked as he approached, and unready buds emerged from a receding wave; he dived to break the wandering bare stems far down, and the flowers dipped to rise with him. Soon he passed through lanes of corn with lily sceptres leaning against his polished side.

Between the mountains and the sea are many woods; those which rise with the valley slopes are of oak, beech and ash, with some elm and sycamore and still fewer wild cherry and crab trees that bring a breathing pallor in May. Above these a hill is sometimes covered with the serried monotony of

a larch plantation, or with tall hazel bushes which bring the woodman, the charcoal-burner and the basket-maker every time their growth is of age. These woods bear, before the meadows, those early flowers which may open ere leafage shuts out the light. One wood sinks to the shore, and there in May lilies of the valley spring so thickly that the wary tourist thinks their young leaves those of garlic. Inland, another wood has stony hollows filled with the first snowdrops, which leave a bright green softness amid the harsh soil of March; before this can die portions of it separate, first palely, then more tall, until little fingers lean down and yellow into single daffodils. Barren places bear green hellebore in May, known only by the greater spareness of the divided leaves (each springing from the ground on its own stalk) until the green petals of the bloom appear like the calyx of some greater bloom whose petals were shed unseen.

In these woods, and perhaps nowhere else in England, *Daphne* Mezereum (the Mezerion Tree of Bacon's garden) grows wild; before any leaves come its thin sticks are muffled closely in purple florets, and to pass it when the woods obscure the March moonlight is to possess a tenuous sense of the memory and expectancy of lily-scents hid in Summer nights. In a village a mile away is a learned and proud gardener who fosters a mezerion tree which he brought from Switzerland for its rarity.

Another wood has greater trees and fewer; its dimness is briefly starred with blackberry blossom, and bluebells hover there like a creeping haze always about to rise. When the bluebells are gone with May fainter harebells come as a shadow of that haze. But in this wood the foxgloves of July are most memorable; they spire in companies until lost in their own perspective; there are steep crags which seem higher for the slender stems springing from every crevice: they stand in a strange silence, as if no bees would come to their twilit dells—but the one white foxglove which once grew tallest in the most remote cluster was stranger and more wonderful than the silence.

Hill-tops make a little land beyond these woods, a hollow before the last hills begin. Herb-willow and palm-sallow seem a filagree touched with dim yellow and dark silver as they come against an April sky; there are fenny places where sweet gale disguises May with a simulation of Autumn bronze; and everywhere grass of Parnassus

brings thoughts of workers in rare metals and setters of small jewels, with its thin clear blades and clearer stars placed so precisely.

In another direction this moorland turns to sheltered common as the farm-lands are approached. Here, when May is well begun, a profusion of reddish purple spotted orchis, sheltering green crisp grasshoppers, diverts the more superficial searcher for scarcities from the presence of the spare and livid fly orchis.

At one point a hill-side of limestone scree dips into the valley, bearing only dandelions more delicate than chrysanthemums in the fineness and pure colour of their petals, and tall thistles white with fulsome tufts of down in August.

Down the valley the roads from farm to farm and village are bordered in June with lavender scabious and dusky cream meadow-sweet; at some cottage corner a high bursting pod of rhubarb blossom will seem exotic and exuberant among the umbels of jointed kexes, an onion flower will uplift in August its shapely white globe of florets on a green rod, or a coarse scent in April will discover virile shoots of spreading crown imperial once flung from the cottage garden.

In the fields of dilatory farmers green young corn is hid by discordant yellow sprays of charlock: in hay meadows the thickly set moon daisies seem brown through the haze of seeding grass plumes.

The hedges have many wild rose shoots and honeysuckle that is sure to bloom a second time, sparely and lingeringly, in September: the field-hedges are often heightened by ancient damson trees, clouded with fluttering whiteness in May, bending heavily at the Summer's end. There are elder trees, too, between field and lane; their late June blossom has a rank scent, as of cows newly come from river-pools and munching new hay spilt from carts in twilight.

There is a place where one ancient elder tree rises from a cluster of tiny-flowered borage and burr-docks with purple stems: hens stand among its boughs when in October the bunched berries drop ripely at a touch. Across the road a wooded steep cleft opens in a hill-side: at its entrance is a yard surrounded by deserted buildings. The hard soil is dappled with tufts of blue-flowering viper's bugloss; moister earth under trees is half hidden by curling glossy leaves of green arum; Our Lady's bedstraw spreads its tangles of little flowerlets among dull, rough leaves of wild sage; and over

all rise monstrous growths of henbane about July, with long fronds bearing clammy, pungently scented leaves, then serried polished nipples where blooms have already died, then at the tips the last creamy bells veined with earthy purple and of a thick soft texture like a crushed moth's.

XLI

THE LITTLE RED DOG

> ". . . My being was an accident,
> Which fate, in working its sublime intent,
> Not wish'd to be, to hinder would not deign."
>
> —HARTLEY COLERIDGE.

SAUNTERING along a lane-like road between Charterhouse Hinton and Woolverton, in the West Country, I spied a small red dog trotting along some distance behind me. He was in the middle of the road, but seeing that he was observed he sheered off to the other side, and when nearly abreast of me paused suspiciously, sniffed the air to get the exact smell, then made a dash past, and after going about twenty or thirty yards full speed dropped once more into his travelling trot, to vanish from sight at the next bend in the road.

Though alone I laughed, for he was a very old acquaintance of mine. I knew him well, although he did not know me, and regarding me as a stranger he very naturally associated my appearance with that well-aimed stone or half-brick which had doubtless registered an impression on his small brain. I knew him because he is a common type, widely distributed on the earth ; I doubt if there are many countries where you will not meet him : a degenerate or dwarf variety of the universal cur, smaller than a fox-terrier and shorter legged ; the low stature, long body, small ears, and blunt nose giving him a somewhat stoaty or even reptilian appearance among the canines. His red colour is, indeed, the commonest hue of the common dog, or cur, wherever found. It is rarely a bright red, like that of the Irish setter, or any pleasing shade of red, as in the dingo, the fox, and the South American maned wolf ; it is dull, often inclining to yellow, sometimes mixed with grey as in the jackal, sometimes with a dash of ginger in it. The unbeautiful yellowish-red is the prevailing hue of the pariah dog. At all events, that is the impression one gets from the few of the numberless travellers in the East who have con-

descended to tell us anything about this low-down animal.

Where the cur or pariah flourishes, there you are sure to find the small red dog, and perhaps wonder at his ability to maintain his existence. He is certainly placed at a great disadvantage. If he finds or steals a bone, the first big dog he meets will say to him, "Drop it!" And he will drop it at once, knowing very well that if he refuses to do so it will be taken from him, and his own poor little bones perhaps get crunched in the process. As compensation he has, I fancy, a somewhat quicker intelligence, a subtler cunning. His brains weigh less by a great deal than those of a bulldog, or a big cur, but (like ladies' brains compared with men's) they are of a finer quality.

When I encountered this animal in the quiet Somerset road, and laughed to see him and exclaimed mentally, "There he goes, the same old little red dog, suspicious and sneaky as ever, and very brisk and busy although his years must be well-nigh as many as my own," I was thinking of the far past, and the sight of him brought back a memory of one of the first of the small red dogs I have known intimately. I was a boy then, and my home was in the pampas of Buenos Ayres. I had a young sister, a bright, lively girl, and I remember that a poor native woman who lived in a smoky hovel a few miles away was fond of her, and that she came one day with a present for her—something precious, wrapped up in a shawl—a little red pup, one of a litter which her own beloved dog had brought forth. My sister accepted the present joyfully, for though we possessed fourteen or fifteen dogs at the time these all belonged to the house; they were everybody's and nobody's in particular, and she was delighted to have one that would be her very own. It grew into a common small red dog, rather better looking than most of its kind, having a bushier tail, longer and brighter coloured hair, and a somewhat foxy head and face. In spite of these good points, we boys never tired of laughing at her little Reddie, as he was called, and his intense devotion to his young mistress and faith in her power to protect him only made him seem more ludicrous. When we all walked together on the grass plain, my brother and I used to think it great fun to separate Reddie from his mistress by making a sudden dash, and then hunt him over the turf. Away he would go, performing a wide circuit, then, doubling back, would fly to her for safety. She, stooping and holding out

her hands to him, would wait his coming, and at the end, with one flying leap, he would land himself in her arms, almost capsizing her with the force of the impact, and from that refuge look back reproachfully at us.

The cunning little ways of the small red dog were learned later when I came to know him in the city of Buenos Ayres. Loitering at the waterside one day, I became aware of an animal of this kind following me, and no sooner did he catch my eye than he came up, wagging, wriggling, and grinning, smiling, so to speak, all over his body; and I, thinking he had lost home and friends and touched by his appeal, allowed him to follow me through the streets to the house of relations where I was staying. I told them I intended keeping the outcast awhile to see what could be done with him. My friends did not welcome him warmly, and they even made some disparaging remarks about little red dogs in general; but they gave him his dinner—a big plateful of meat, which he devoured greedily, and then, very much at home, he stretched himself out on the hearth-rug and went fast asleep. When he woke an hour later he jumped up and ran to the hall, and, finding the street door closed, made a great row, howling and scratching at the panels. I hurried out and opened the door, and out and off he went, without so much as a thank-you. He had found a fool and had succeeded in getting something out of him, and his business with me was ended. There was no hesitation; he was going straight home, and knew his way quite well.

Years afterwards it was a surprise to me to find that the little red dog was an inhabitant of London. There was no muzzling order then, in the seventies, and a quite common sight was the independent dog, usually a cur, roaming the streets in search of stray scraps of food. He shared the sparrows' broken bread; he turned over the rubbish heaps left by the road sweepers; he sniffed about areas, on the look-out for an open dustbin; and he hung persistently about the butcher's shop, where a jealous eye was kept on his movements. These dogs doubtless had owners, who paid the yearly tax; but it is probable that in most cases they found for themselves. Probably, too, the adventurous life of the streets, where carrion was not too plentiful, had the effect of sharpening their wits. Here, at all events, I was witness of an action on the part of a small red dog which fairly astonished me; that confidence trick the little Argentine beast had practised on me was nothing to it.

In Regent Street, of all places, one bright winter morning, I caught sight of a dog lying on the pavement close to the wall, hungrily gnawing at a big beef bone which he had stolen or picked out of a neighbouring dust-hole. He was a miserable-looking object, a sort of lurcher, of a dirty red colour, with ribs showing like the bars of a gridiron through his mangy side. Even in those pre-muzzling days, when we still had the pariah, it was a little strange to see him gnawing his bone at that spot, just by Peter Robinson's, where the broad pavement was full of shopping ladies ; and I stood still to watch him. Presently a small red dog came trotting along the pavement from the direction of the Circus, and catching sight of the mangy lurcher with the bone he was instantly struck motionless, and crouching low as if to make a dash at the other, his tail stiff, his hair bristling, he continued gazing for some moments ; and then, just when I thought the rush and struggle was about to take place, up jumped this little red cur and rushed back towards the Circus, uttering a succession of excited shrieky barks. The contagion was irresistible. Off went the lurcher, furiously barking too, and quickly overtaking the small dog dashed on and away to the middle of the Circus to see what all the noise was about. It was something tremendously important to dogs in general, no doubt. But the little red dog, the little liar, had no sooner been overtaken and passed by the other, than back he ran and, picking up the bone, made off with it in the opposite direction. Very soon the lurcher returned and appeared astonished and puzzled at the disappearance of his bone. There I left him, still looking for it and sniffing at the open shop doors. He perhaps thought in his simplicity that some kind lady had picked it up and left it with one of the shopmen to be claimed by its rightful owner.

I had heard of such actions on the part of dogs before, but always with a smile ; for we know the people who tell this kind of story—the dog-worshippers, or canophilists as they are called, a people weak in their intellectuals, and as a rule unveracious, although probably not consciously so. But now I had myself witnessed this thing, which, when read, will perhaps cause others to smile in their turn.

But what is one to say of such an action ? Just now we are all of us, philosophers included, in a muddle over the questions of mind and instinct in the lower animals, and just how much of each element goes to the com-

position of any one act; but probably most persons would say at once that the action of the little red dog in Regent Street was purely intelligent. I am not sure: the swiftness, smoothness, and certainty with which the whole thing was carried out gave it the appearance of a series of automatic movements rather than a reasoned act which had never been rehearsed. Perhaps Professor Lloyd Morgan will make it all clear in his next book.

Recently, during my country rambles, I have been on the look-out for the small red dog, and have met with several interesting examples in the southern counties. One, in Hampshire, moved me to laughter like that small animal at Charterhouse Hinton.

This was at Sway, a village near Lymington. A boy, mounted on a creaking old bike, was driving some cows to the common, and had the greatest difficulty in keeping on while following behind the lazy beasts on a rough track among the furze bushes; and behind the boy at a distance of ten yards trotted the little red dog, tongue out, looking as proud and happy as possible. As I passed him he looked back at me as if to make sure that I had seen him, and noted that he formed part of that important procession. On another day I went to the village and renewed my acquaintance with the little fellow, and heard his history. Everybody praised him for his affectionate disposition and his value as a watch-dog by night, and I was told that his mother, now dead, had been greatly prized, and was the smallest red dog ever seen in that part of Hampshire.

Some day one of the thousand writers on "man's friend" will conceive the happy idea of a chapter or two on *the* dog—the universal cur—and he will then perhaps find it necessary to go abroad to study this well-marked dwarf variety, for with us he has fallen on evil days. There is no doubt that the muzzling order profoundly affected the character of our dog population, since it went far towards the destruction of the cur and of mongrels—the races already imperilled by the extraordinary predominance of the fox-terrier. The change was most marked in the metropolis, and after Mr. Long's campaign I came to the conclusion that here at all events the little red dog had been extirpated. He, with other varieties of the cur, was the dog of the poor, and when the muzzle deprived him of his power to find for himself, he became a burden to his master. But I was mistaken; he is still with us, even here in London, though now very rare.

XLII

THE LIFE OF THE RABBIT

"Rabbits be a dale cunninger now than what they used to be."
—A Devonshire Rabbit Trapper.

IN the sloping coppice the wild hyacinths crowd among the furry fronds of the young bracken. Pink campion, wood-sorrel, and a sprinkling of late-flowering primroses grow in the clearing amid the hazel-stubs. The nightingale is challenging the blackbird to melody, the chaffinches cry "pink, pink," as they flit through the oak boughs, and then from the shadiest recess of the plantation comes the soft, melancholy coo of the wood-pigeon. From the sun-warmed dead leaves, the mosses, and the flowers there arises a blend of aromatic odours. And, now and again, the pheasant calls, and a magpie chatters as it flies across the green drive.

The copse is above the rabbit warren, and is one of a chain of small woods upon the top of a sandy ridge, stretching from east to west. On the southern slope, the rabbits have bred and thrived ever since the recollection of the oldest man in the parish, and their number does not appear to increase nor to diminish manifestly from year to year. The place can scarcely be called a sanctuary, for the rabbits are trapped, snared, and shot from August until April; still, it is half a mile to the nearest homestead, and there are spells of days, and even weeks, when these "feeble folk" are unmolested by man. Moreover, the rabbits are conservative in their habits, and show a sense of attachment to certain haunts. Such an event as a general exodus from the warren has never happened, though after a "big day" with the ferrets and guns, the slain are piled in heaps upon the turf, and every rabbit in the colony is left trembling and terrified in those honeycombed burrows.

Rabbits love to be dry and warm. That is why they have chosen this sandy slope, sheltered by belts of woodland, and fronting the sun. All around are good feeding-places—pastures where the juicy grass affords a meal in early spring, fields of oats and swede-turnips, and beyond the villagers' allotment plots, where there are always cabbages and root crops. The sand yields easily to the busy scratching of the rabbits' paws. It is tunnelled and made into chambers, and no water drains into the "buries" or burrows.

When the hungry, pink-eyed ferret comes sniffing along the passages, there are innumerable labyrinths leading to secret hiding-places, and hundreds of apertures, whence the alarmed rabbits can bolt into the open. And when scared by the sight of men and the explosions of guns, the rabbits have just as many open doors by which they may return to the tunnels, and perchance escape the deadly lead from the breechloaders.

Late in the spring there is a great increase in the population of the warren. Hundreds of young rabbits lie huddled up to the does in the huge fastness. Before they are quite weaned they follow their mothers through the dark passages out into the daylight. Timorous, and yet adventurous, they steal out on the short dry grass, when the sun is sinking, and soon begin to nibble. Until they have been startled by enemies, the youthful rabbits are not over-cautious. They wander out of bounds, they are inquisitive, and wont to forget danger in their mad racings and frolics.

Young rabbits have two games. One is mimic fighting, a diversion which is very amusing to watch. The combatants challenge one another, and make feints with their paws, sometimes standing up on their hind legs after the manner of male hares in the breeding season. Then one of the rabbits flies away towards the burrows, pursued by its playmate, and the victor in the contest jumps in the air and performs sundry quaint antics in the nature of a war-dance.

The other pastime may be called "the game of fox." A number of rabbits are feeding on the outskirt of the colony. Suddenly one of them feigns fright, pricks his ears, listens for a second, and then scampers up the slope. In an instant all the long ears and the white scuts stand up, and there is a wild stampede to the sand-banks. Most quadrupeds play at being alarmed. Young horses and heifers enjoy this game, which seems to prove that, besides an imaginative brain, mammals possess a sense of humour, and are fond of playing practical jokes on their comrades.

The slope and the field below it are scored with the "runs," "creeps," or tracks of the rabbits. These pathways are as distinct as the runs of sheep, and they are used by the rabbits in passing to and fro the feeding-grounds. It is in these runs that the poacher sets his wire noose, attached to a stout peg driven into the ground. These wires, or "springes," are made on a slip-knot principle, and when the

luckless rabbit runs its head into the noose, it closes tightly on the neck and holds the victim fast.

More deadly is the gin, or spring-trap, with its terrible teeth that meet with a snap when the unwary rabbit treads upon it. These traps have been rightly condemned as cruel, but they are still set in most parts of the country: for trapped rabbits fetch a higher price in the markets than those that have been killed with shot.

The rabbit of our country leads a life of constant alarms. It grows more sagacious under the persecution of man, and with the increase of shooting and trapping it will develop still more intelligence. Rabbits frequently refuse to quit their buries when hunted by the ferret. They may be learning that it is better to endure the assault of a muzzled ferret than to rush out and face half a dozen guns. The ferret can inflict wounds with its claws, but when muzzled it cannot give the death-bite.

The colour of the rabbit is adapted to its environment, and there is no doubt that the creature realizes this means of protection. In the Crown lands of Berkshire and Hampshire, where there are thousands of acres of fir trees, rabbits sit close up to the trunks, and you may step within a foot of one of these squatting rabbits without perceiving it. Sometimes you may see several rabbits crouching at the base of the fir boles; but unless your eye is educated, you will not notice them, for the colour of the fur almost matches the colour of the fir bark. In open fields, and on moors and downs, rabbits "lie close" on the ground, and may easily be mistaken for a stone or a lump of earth. The poacher frequently captures these sitting rabbits by walking quickly up to them, and falling upon his prey. You can sometimes touch a squatting rabbit, and even a hare, with your stick or your foot before it will take to its feet and run.

The enormous increase of rabbits in parts of the western counties is largely due to trapping. The traps catch other animals, and in fair numbers, and these are the natural foes of the rabbit. Foxes, for example, are constantly taken in the gins, as these implements are laid down in the chief hunting-grounds of the fox. The rabbit is the prey of the fox, and his principal diet. Reduce the number of foxes and you will tend to over-populate the warrens. But not only are foxes kept down by trapping; the weasel, the stoat, and the rarer polecat are caught in the traps. Many farm cats

are clever rabbit-stalkers. A small cat will kill a full-grown rabbit, and carry it for some distance. And as cats on poaching bent trespass into the very places that bristle with rabbit gins, many of them are caught, and killed by the gamekeepers and trappers. On most keepers' trees you will see trophies of cats' tails.

Game preserving also encourages the increase of rabbits. In some localities the gamekeepers shoot foxes in the interest of pheasants, grouse, and partridges, and all the weasel family are marked down as vermin and, if possible, exterminated by means of the snare and the gun. Hawks often seize rabbits. Even the little merlin, that haunts the mountains and grouse moors, can catch, slay, and carry off young rabbits. These winged enemies of the rabbit are also ruthlessly trapped and shot by game-preservers. Jackdaws do not kill rabbits; but they often build in rabbit burrows and among the rocks: and there are gamekeepers who shoot jackdaws "because they worry the rabbits." So the naturally prolific rabbit derives indirect protection through the system of trapping and the warfare against animals that are destructive to game.

As a result, many farms are overrun with rabbits, and farmers complain sorely of the depredations of the ground-game. On the other hand, there are tracts of land, especially in the West of England, where the holders derive the rent, and sometimes make a profit by the sale of trapped rabbits. In more fertile regions, where agriculture can be made profitable, rabbits are regarded as a pest, and there are constant complaints of their damage to crops.

The rabbit's aversion to damp causes it to select the driest and warmest quarters. Sandhills by the seashore, chalk downs, and rocky soils are favourable to the survival of communities of these animals. The dry limestone of Derbyshire and the granite of the Western Counties afford healthy habitats for rabbits. Boggy moorland and very high hills are seldom closely populated with rabbits, for these creatures have almost a horror of wet ground and rain-exposed situations. Heavy rain will deter rabbits from venturing out of their snug burrows. In wet weather rabbits often content themselves with scanty food rather than endure the discomfort of soaked fur. Nature has not protected these animals with a suitable coat for a humid climate. The fur absorbs the rain, and dries slowly after a drenching. Rabbits dislike a wetting even more than cats shun water.

After man, the fox must be regarded as the most dangerous enemy of the rabbit. Foxes are extremely sly in lying in ambush for their prey. They possess splendid scenting power, and they are fleet in pursuit. When a fox steals out of its lair in quest of provender, it chooses a hunting-ground where rabbits abound. Its tactics are those of the scout; it is skilled in observation, and knows the whole art of stalking.

Approaching cautiously through gorse, fern, or undergrowth, the fox crawls towards the feeding rabbits on the sward. It will crouch for an hour, patiently awaiting its opportunity for a spring or a rapid sally. If it can separate a victim from the crowd, and cut off its retreat to the burrows, a chase may ensue. A rabbit hunted by a fox runs swiftly for the nearest cover, and endeavours to dodge its pursuer, or to discover a friendly bury or "clitter" of rocks where it may escape pursuit. Trusting to its scenting power, the fox steadily works on the track of the rabbit, and runs it down by persistency rather than by fleetness. Sometimes the fox gives tongue, like a hound on the scent, but its cry is not musical. It is a sharp yapping sound.

Stoats and weasels destroy large numbers of rabbits. They enter the burrows, and pounce upon sleeping rabbits, or pursue their victims by scent in the open. A weasel will follow a rabbit for half a mile: for these little animals can run at a considerable speed, and they possess a keen olfactory sense. Stoats and weasel range long distances in search of rabbits, and explore hedgerows, burrows, and tussocky fields where rabbits often "lie out" in fine weather. The weasel seizes its prey by the neck, and grips tightly with teeth and claws, while it gnaws a hole and sucks the blood. It only eats a small portion of the neck, and sometimes leaves the rabbit half dead when it has made its meal.

The white underside of the rabbit's tail, or "scut," serves as a danger signal. Watch a number of these timid animals feeding at twilight, and you will note that at the first suspicion of danger one of them will raise its scut and prick its ears. The white of the scut is the cue for alertness in the whole company, and if one rabbit runs to a place of hiding the rest quickly follow its example. Rabbits show no fear of sheep and cows, but they seldom feed near to horses. Colts sometimes chase rabbits in a spirit of play.

The food of the cony is varied. It

will eat bark, green oats and wheat, grass, turnips, rape, and garden vegetables. In the winter it is frequently hard-pressed to find a sufficient diet, and during a time of deep snow and severe frost, rabbits lose flesh and become emaciated. Snow covers the herbage and the crops; the rabbits resort to the woods, and keep themselves alive by nibbling the bark of the ash and the hazel. They will travel at such times to orchards, and eat the bark of young fruit-trees, often biting deeply into the wood and causing serious injury. Where rabbits abound, fruit-growers are compelled to protect their trees with a coating of tar or thick lime at the base of the stems. In the more sheltered coverts snow lies less thickly than in the open fields and on the downs, and here and there rabbits are able to dig down to moss or grass, and to stave off starvation in hard weather. You may see green patches on banks sloping to the south where the rabbits have scratched away the snow. The foot tracks from the warren will show that the hungry rabbits become more venturesome as the severity of the weather increases. They find their way to gardens and to hayricks close to the farm-houses.

When the corn is tall it affords a safe jungle for rabbits, and they take up quarters in the wheat-fields. Until reaping begins they are safe, but the first rattle of the reaping machine is the death-knell of many hares and rabbits. As the machine cuts its way, the jungle becomes smaller and smaller. Alarmed by the noise, some of the rabbits dash out. But the gunners are waiting for them all around the last patch of standing corn, and many are shot while trying to gain the hedgerows and the coppices. Dogs are also lying in the stubble, and there are sharp chases, and one by one the panic-stricken rabbits are pursued, and seized by the sheep dogs and terriers.

But before this September tragedy, the summer life of the rabbit is merry. There is little shooting or none, and the warren is quiet. The warm twilights tempt the denizens to wander; the dews dry quickly, and the banks are warmed by the July sun. This respite from persecution lasts for a few months, and during that time rabbits are less shy and wary. During the winter shooting season the warning cry of the blackbird, the rattle of a magpie, or the scream of a jay apprises the rabbits that an enemy is afoot, and ears and scuts proclaim their alarm.

It has been said that rabbits cannot climb trees, but this is not quite accurate. A rabbit will often ascend

From a photograph by
Reginald B. Lodge.

THE RABBIT.

the sloping hollow trunk of a pollard willow, or an old stunted oak, and make a lodging in the crown of the tree. Such positions are not infrequently chosen by does when about to give birth to their young.

XLIII

THE WATER-VOLE

"The edge of the moist river-lawns
And the brink of the dewy caves."
—P. B. Shelley.

THE common water-vole, or, as it is more popularly termed, the water-rat, is classed as one of the fifteen hundred odd species known to science under the heading of Rodentia. The incisors, or gnawing teeth, which are very highly developed in all rodents, and form their distinguishing mark, are, in the water-vole, only four in number, two in each jaw. In many rodents these teeth grow at an enormous rate, in order to make up for the constant wear and tear to which their owners subject them. I should say, however, that, by reason of the soft food upon which it mostly feeds, the teeth—the incisor teeth—of the water-vole grow more slowly than those of any other rodent, with the possible exception of the musquash (*Fiber ziebthicus*) of North America.

In size the water-vole approximates to that of the brown rat; and in general outline, it is certainly somewhat rat-like if glanced at casually. On closer inspection, however, it will be seen to be more thick-set than the rat, and to have a distinctly blunt muzzle. The tail is long and somewhat tapering, the limbs short and strong, and the ears are small and almost completely hidden by fur. The fur is short and rather close, and in colour usually of a very dark reddish-brown; but in Scotland, and certain parts of Cambridgeshire, there exists a black variety.

The habitat of *M. amphibius* in this country is practically anywhere in the vicinity of fresh water: ponds, canals, rivers, streams and brooks, etc. It is seldom found far from water, and indeed, I doubt if it could live for long away from it. In localities suitable to its habits this little mammal may be found in fair numbers; but it does not appear ever to increase suddenly and overwhelmingly, as in the case of some other members of the same genus.

On the banks of the river, stream, or other piece of water where they may be living, these mammals construct their intricate and numerous burrows. Like the brown rat and the rabbit, the water-voles seem to spend an almost prodigal amount of labour upon their habitations. Their tunnels twist and turn in every direction, often undermining the bank and causing it to give way. They seem to be possessed by a consuming fever which drives them to dig, dig, as if for dear life. That each family of water-voles begin their abode with an idea of exclusive use, and with a separate scheme, I quite believe. But, living in colonies as they do, and burrowing close together, they naturally soon break into one another's tunnels, and do not repair the mistake. The only burrows which appear to be kept separate are the breeding ones, which are like rather intricate editions of the familiar rabbit's "stop." The entrances to these burrows are both above and below water, since it is not always safe for the inmates to show themselves above the surface. A few holes are almost always to be seen driven very high up in the banks; these are emergency exits, constructed chiefly by way of precaution against floods.

To a certain extent *M. amphibius* lives upon its surroundings. That is to say, not only must the banks and the water suit its habits, but the vegetation in the immediate vicinity must afford suitable food. Take fifty yards of an ordinary stream, for instance, where water-voles occur. What do we find? The banks must be fairly high and steep, for to make holes on a flat surface which would probably be trodden on and stamped in by cattle would hardly do. Vegetation, besides trees and grass, rushes, the yellow iris, water-lilies, watercress, and many other water-loving plants which not only bear succulent green food in the summer, but leave in some cases more or less bulbous roots which can be dug out of the mud in the winter.

Such vegetation as mentioned above forms the chief, but by no means the only, food of the water-vole. Most cultivated root crops, such as potatoes, mangel-wurzels, etc., are devoured by them, to some extent, if they can be obtained within easy reach.

Being good climbers these little animals will even sometimes mount into trees after fruit; and I have also known them climb up bean stalks after beans. On the other hand they seem but seldom to make their way into farm or other dwelling-houses, or mills,

after grain like the brown rat; a fact which seems to show their objection, or inability, to gnaw through woodwork and other hard substances. This agrees with what I have said before as to the water-vole's gnawing or incisor teeth not being constructed to withstand the same wear and tear as those of the rat and many other rodents.

As to whether the water-vole is carnivorous, there seems to be some difference of opinion. In many localities the country people believe that it is; but naturalists, for the most part, attribute the belief to confusing the animal with the brown rat.

Now, however, Mr. Patterson, who is one of the most observant naturalists we have, says: "This vole is harmful to fish," and thus settles a very vexed question. Speaking personally, I have for some time been of opinion that they are harmful to frogs, but have never been able to catch them in the act. By way of inferential evidence, however, I may say that in a certain marsh, no matter how abundant tadpoles may be, adult frogs are comparatively scarce. Water-voles alone of birds and mammals are numerous in this marsh, and they swarm. I cannot bring myself to believe that a single pair of herons, or two or three pairs of grey-crows, working over some miles, can account for this scarcity of frogs. Moreover, I have noticed that what frogs there are in the locality are to be mostly found in those dykes which, for some reason, are not much frequented by water-voles.

Although water-voles do not hibernate in the strict sense of the word, very little is seen of them in winter. Occasionally, however, upon a mild winter's day, one will venture abroad here or there in search of food, or, it may be, to bask in the sun.

With the warmer months water-voles begin to appear out of their burrows in the early evening, and as night draws on their numbers increase. Throughout the night they pass to and fro, and may be heard, rather than seen, in the dark hours. What they do then it is not so easy to say. The moon which reveals them to you also reveals you to them, and observation is consequently difficult.

That water-voles make excursions on land we know by the occasional adventurous specimen we may sometimes come upon in the evening. If the field has anything to attract them, one can understand this frequent risk of life and limb. That it is frequent, even under cover of darkness, I know must be the case by the number and

length of the well-beaten "runs." Now, when these "runs" lead into a grass-field pure and simple (as they often do), I am quite at a loss to understand what a grass-field so far away has to offer that it does not afford at the water's edge. If it were roots we should find signs of diggings; and if it were grass, why go so far to get that which grows close at hand? Mammals seldom act without a reason, as the habits of their ancestors are indelibly imprinted upon their brains. Moreover they rarely risk their lives without cause.

The water-vole, like most rodents, is unfortunate enough to possess many enemies, and when therefore they venture forth thus into the fields they run very serious risks and must suffer heavy losses.

The fox waits for them along the banks, ready to dart in and cut off any unwary wanderer from the water, and generally off from life as well. Sometimes, however, the fox reckons without his host, so to speak. It is the custom of experienced old voles to run a branch tunnel well out into the field, entered by a very small hole, and used only upon emergency. The air of chagrin assumed by a fox when he thinks he has got between a water-vole and its native element, only to see it vanish down one of these holes, is highly amusing. Reynard is very fond of this form of sport, and will often spend hours at it.

Another deadly foe which harries the water-vole at night is the owl. The extraordinary keenness which the owl shows in detecting the slightest movement of a lurking vole, the silence of its approach, and the wonderful certainty of its swoop in the darkness, render it terribly destructive to all rodents.

Perhaps, however, the worst enemies which the water-vole has to reckon with are the stoat and the weasel. There is no escape from the attacks of these small assassins save in the water. They will hunt at any hour of the day or night, and they are as much at home in the narrow winding tunnels as the water-vole itself. Moreover, both the stoat and the weasel are bloodthirsty creatures which will kill for the mere pleasure of killing; and they will, if they get the chance, slay any number of voles.

Even in the water itself the water-vole is by no means safe, for the lithe otter will hunt and kill it remorselessly. The pike—that shark of the fresh-water—may hurl itself at any moment upon the luckless little creature from some dark and secret fastness by the

bank. Finally the eel—if it be large enough—will attack and kill young or weakling voles.

By day as well as by night, when out of the water, the water-vole must keep a sharp look-out if it would live. Most birds of prey seem partial to the flesh of this rodent. Kestrels commonly prey upon it, and may frequently be seen hovering in their peculiar "waiting" poise over their burrows, ready to drop like a stone should one venture forth. Even the great eagle itself feeds upon it. So also do buzzards and harriers. The only hen-harrier I ever saw in this country had just caught a water-vole.

I think, also, that our old enemy the grey crow will snap up a water-vole if he gets a chance—especially if he should happen upon a young one. Be this as it may, I always notice that water-voles at once make themselves scarce when a grey or carrion crow appears upon the scene.

The young of this species are born in April or early in May. The nursery is a neat, small chamber, resembling, as before said, a rabbit's "stop," and lined with dry grass, etc. The usual number of young is five or six to a litter. The young are carried by the mother, after the fashion of a cat carrying kittens, should it be needful to move them before they can swim. In this way the female has been known to shift her young, before the advent of a flood, from one nursery to another situated at a greater elevation and perhaps in the opposite bank of the stream. When able to swim, which they learn to do at a very early age, the young follow both parents in the water; and a family swimming thus in company forms a very pleasing picture.

In conclusion, I feel I should not be a conscientious naturalist were I to close this article without asking those who hunt the rat to discriminate between the brown rat and the water-vole, or so-called water-rat. The harm which water-voles do upon waters—even those preserved for fishing—is, at the most, extremely small, if not nil. Therefore rat-hunters may well be urged to spare this harmless and interesting little mammal, without which the scenery of our picturesque English streams would be incomplete.

XLIV

SALMON

"Now, safe the stately sawmont sail,
And trouts be-dropped wi' crimson hail,
Since dark in death's fish creel we wail
Tam Samson dead."

—Burns.

At the tail of a great pool, some two hundred yards above the bridge, the Tweed takes a sudden bend, and comes on with a gentle, shallow flow. The winter spate slackens in the pool, spends its forces on the opposite bank, and enters on the straight with a reduced eroding power.

On some late September or October day the rumour goes round that the fish are up. The event may have been expected for weeks. The Tweed has a habit of running at its summer level far into the autumn. Salmon linger in the brackish water about Berwick, pause in the deep and broad sweep by Dryburgh and Kelso, or by Melrose Abbey, before passing Abbotsford to enter the narrow reach between the hills. Deceived by a freshlet, they may have been huddling under the dyke, only some two miles down, a prey to the vilest form of poaching.

Over the parapet the lieges from the near village command the lively scene below. No Tweed-side man need be told about the habits of salmon: the whole life story thus passing under his eye. The fish are large. Autumn fish are in the main large. They are thought to be the older and maturer salmon. They look larger, because so excellently well filled up. If they have come straight from the sea, they are straight from the feast. The latest meal of whiting or herring may be in process of digestion. The females are distended with roe. Ripe fish, and ready to spawn, are they which dot the bottom of the straight run between the pool and the bridge.

The males fight for possession. Then the pairing comes. Whether the female is always the willing spoil of the victor may be open to question. Mating seems sometimes to take place in the sea. Salmon enter the river in pairs. This arrangement may well be disturbed: the stronger may still fight and win. Over the last groove in which the eggs have been placed the tail swishes the gravel. The work of nesting being accomplished, the exhausted workers drop down to the pool below; male and female to separ-

ate pools. Whether it take place in sea or river, mating is only for the time.

Other and smaller fish gather from the pools where they have been lying, it may be for months, waiting on the coming of the autumn. They are darker, from their longer stay in fresh water. There is one spawning time, though not one running time. When the darker fish left the sea will appear anon. They, too, drop down to the pools.

Thin and unsightly, they lie during the coming weeks. Like other weakly creatures, they are exposed to disease. Weakest and most susceptible are those which have spent the summer in the river. Noxious spores reveal themselves in patches on the skin. Rubbing against stone or tree root turns the patch into a sore. Those who watched the lively spawning scene over the parapet may witness the sequel by walking down a mile of river bank. How to counteract the saprolegnia is hard to say, except in the purity of the stream and the virility of the fish.

Whether newly run salmon feed in fresh water has long been a moot point. Nor is the rising to a brightly coloured fly thought to be convincing, even with the explanation that they mistake it for a shrimp. Where the fly fails a worm—and the bigger the better—is often deadly; and nothing lures so certainly as parr. Where the great branches spread over the water the salmon are seen to rise through the shaded pool and suck in the insect larvæ dropping from the leaves. A trout could do no more. Experts have tried to show that the digestive apparatus is altogether out of gear; but it manages to dispose of these morsels somehow. Whatever may be the case with the newly run, there is no doubt about the kelt. It eats what it can get.

While yet the last spent fish is dropping down to the sea, the early run has begun. Bright and fresh are the new-comers after a winter in the sea. They are not large, and probably young. To many it must be a first visit on such an errand. Though well fed, they are lithe and shapely; for the roe is young yet. The consummation is far distant; months ahead. Spawning is in the autumn. Life has two phases: growth and reproduction. In the migratory fishes, these are more sharply marked off than in most creatures. The salmon grows in the sea and breeds in the river. When it has fed full, the sea has served its purpose.

Some play awhile, between Coldstream and Kelso, and go to sea again.

These are the wiser. During their stay they are excellent sport. Salmon fishing is at its best when the roe is young—say when April cloud and sunshine are on the water. Many elect to wait in the river against the distant spawning day. They soon lose colour and virility, and pass a sluggish existence in the deeper pool, seldom rising to a lure.

Scarcely have the spring fish lost the sheen of the sea and taken to the pools than the grilse appear. The run may last from midsummer till early autumn. Milt and roe are budding. These immigrants are the breeding stock. In their turn they retire into the deeper places and wait on, in semi-quiescence. So far all is clear. The running has to do with one of the dominant phases of life. These fish of different ages are there to breed.

In the closing weeks of the year a somewhat exceptional run of salmon enter a limited number of our northern streams. I have not heard of them on the Tweed. They enter the Forth and make their way, past Stirling and Callander, to those magic lochs strung on its head waters.

On the Tay their presence is known to all the world. There they turn the winter of an angler's discontent into an early and glorious summer. They open the season vivaciously. For many they end it also. It is a bright, isolated episode. Through the second half of January and into March they give sparkling weeks; the only sparkling weeks to those who rent no water. They bring the earliest visitors to Scotland, filling the hotels on the banks of the river and the shores of the loch. Therefore this somewhat obscure run of winter fish is followed with interest by those who are not very familiar with the movements of other salmon. It is the only one which concerns them.

They average some seventeen pounds. For the most part they are barren, roeless, and miltless. They come later than the autumn run, because, not hurried by a like imperious necessity, they come earlier than the spring run, without the excuse of impatient forecast. Yet they come as regularly as either, and in fairly constant numbers. Were the visits more occasional, they would be less puzzling. They are not there for the ordinary purpose of spawning. They have simply fed full and turned their tails to the sea.

In numbers, next to those of the Tay, the winter salmon are found in the Ness. They pass up the six miles of clear, swift, shallow current. Thence along the line of lochs strung on to the

Caledonian Canal to the distant Garry. Entering from the sea on the east they reach, by these inland waterways, almost to the west coast.

Among the spawning fishes there would seem to be a spring run, still young-roed, and months from the redds. A second run of summer grilse, also young-roed, and with weeks of waiting; and yet a third autumnal run of ripe fish. Some streams number all these runs in their annual calendar.

The Ness is doubly interesting. Not only is it one of the few streams chosen by the winter salmon, but it roughly divides the streams which have a full from those which have an imperfect calendar. South of the Ness all the great rivers on the east coast of Scotland—the Dee, the Tay, the Forth, the Tweed—are full-seasoned. North of the Ness and round by the west coast of Scotland many of the streams are short-seasoned.

Fishing the Tweed on a summer day is a somewhat painful pleasure, and needs great evenness of temper. Almost every cast yields—so far so good. Should three hooks be on the cast, all are filled; but not exactly with the fish one wants. The ten or eleven dark, transverse bars are telltale, not to talk of the small mouth in which the barb is fixed. The order to return them to the water is disregarded, and visiting anglers fill their dry baskets.

Such are the outcome of the eggs placed in the trenches on that October or November day. Not one parr survives for each thousand eggs. Enemies have waited all along the line, compared with which the industrious angler is an innocent. The heaviest rainfall seems to rush down to the sea all at once. Floods in these days of rapid drainage scour deep, and send the gravel rolling and the eggs dancing on the brown water. Trout love the roe, and watch for the hatching, when the fry move helplessly about with the attached sac.

So many are the risks, and so few the survivals, that hatcheries have come to the rescue. Nature was wise enough to foresee the danger, and is old enough to watch the working and hold the balance. The multitudinous eggs of a single salmon are meant to provide against the waste, otherwise they are themselves a waste. Were all to survive there would be a struggle for life, indeed. If the demands of the table are in excess of the supply, the evil which causes this and the remedy are alike obvious. Our methods are at fault. Modern means of capture

must be looked to. Public interest must over-ride personal profit, and makeshifts yield to natural law. We must serve the year rather than the hour. Were we to deal with other food supplies as we do with this we would soon starve, and richly deserve it.

A few more salmon left in the water will do all that is needful. To justify our greed and repair the waste by hatching out a few eggs is the act of simpletons. The nemesis will appear somewhere; in some way is bound to come. To say that the artificially reared fry are unlikely to make much difference in the number is only half the truth: they will enervate the life of the stream. They will do no good: they are certain to do mischief.

If the parr which thus find their way into the basket were left in the water for a season they would lay aside their dusky bars. Next May or thereabout they would drop down the stream as silvery coated smolt. Whether the migratory instinct is translated into action without any guidance were hard to say. With or without a leader who has been there before, the smolt find their way seaward. In the brackish water of the estuary they linger until they are acclimatized. Countless enemies who know their habit wait for them there, and on the margin of the sea.

The marine life of the smolt, like that of the salmon, is not so clear as that in the river. In its future are bars of shadow and light, of mystery and clearness. That it eats voraciously, following the shoals, is all that is absolutely certain. It goes to sea to eat, and does it. It grows rapidly and enormously.

Because we do not see the process of growth we find different names for the stages. We do not so mark the stages of the haddock's growth. The salmon tells its tale in chapters each with its heading. The smolt comes out of the shadow of the sea, to the light of its native stream, as the grilse, having grown from ounces to pounds. Another belt of shadow, another season of mystery, and the grilse appears as the spring salmon. And then it joins the veterans which come up in the autumn.

XLV

ANAX IMPERATOR

"He dried his wings; like gauze they grew.
A living flash of light he flew."—LORD TENNYSON.

THE peopling with wild life of woods and waters formed artificially is to me often a mysterious work. Flowers, insects, sometimes even fishes, will appear on the scene though hitherto they have been unknown in the district. Make a pond or lake, using for your water supply only the hidden springs that make the ground round about soppy; even confine your efforts to catching the moisture in the air by means of straw and clay and a shallow basin scooped out on some common or among the hills; and before long Nature will give it forms of life strange to the place—insect life especially, above water and below.

There is a shallow artificial pond, a few acres in extent, among the pine and birch woods which is good to visit in July. It does not offer the refreshment of the clear, running stream. It is half choked now with American pond-weed and with native water flora, so that the waterfowl can only paddle about slowly. But, through the sheltered nature of the place, the face of the lake is glassy still; it mirrors the woods and the sky to perfection on a bright day.

Each tree round the lake, with great ceiling of blue and grey above, is doubled to a detail in a world below water; so that if, lying by the lake, I wish to study the beauty of form and colour about the trees or clouds, it can be done without raising the eyes. The floating leaves of the water plants seem not in the least to interfere with the reflection. All that is needed for faithful representation of the sky and wood here is a glossy smooth surface and a bright sun at the back of the watcher.

When the sun is out, the dragon of the wooded lake is on the wing. As he flies to and fro across the centre of the lake, sometimes settling on the rhododendron islet in the middle, he may give one the idea of some diaphanous bird, a bird of fairyland. His crystalline wings, wafer-thin, flash in the sun, and at fifty, even a hundred yards distance, we can get glimpses of the bright blue of his body. This splendour is the Emperor of English dragon-flies, *Anax imperator*.

He looks all sheen and pride; and, for flight, it is as if he enjoyed not so much mastery over the air as com-

merce with it—as we can fancy the red hawk does.

Anax is imperious, "bears with no rival near the throne." The lake just now holds two emperors at least, besides, perhaps, their consorts, whom I have not noticed. When one emperor invades the other's realm, a fiery, running duel begins. Up and down the outraged tyrant pursues the invader, both darting, skimming just above the lake with their arrowy straightness of aim. Anax has not, I should say, the swiftness of some of the moths, of the humming-bird hawk moth, but his is superlative flight not the less, proud and beautiful as that of any winged thing.

Not only the lake in the woods, but the rough, boggy patches about it, even the dry, rising ground, are now full of a dragon-fly of quite another character. This is *Puella*, the little girl, a slip of a thing, with—compared to the emperor's—a weak flight, but not a dancing or bobbing flight like the demoiselle's. The little girl's wings are of the usual crystalline texture, and the body is pure bright blue, with regular rings of black. You see this choice fly flitting over all parts of the lake when the sun is out, constantly settling on the leaves of the water-lilies and any scrap of green or brown-green that thrusts up to the air.

On a very hot afternoon the place has a tropical look and atmosphere; an effect produced by these glittering flies, dragons of the air, and the burning sky blue mirrored in the dead still lake. But if a thrush sang by the lake, on such a day, the whole might be homely English at once. The thrush is our national bird.

XLVI

FIELD NOTES ON SOME ENGLISH BUTTERFLIES

"There is a difference between a grub and a butterfly; yet your butterfly was a grub."
—SHAKESPEARE.

AMONG the white butterflies that flit about the meadows, and even the grassy margins of the high roads, in May and June, will be noticed some that have the outer portions of the forewings orange-coloured. These are the males of the orange-tip, but the females are without the orange patch. The undersides of the hind-wings in both sexes are marked with greenish, and when the insects alight on the white flower-heads of the beaked

parsley, and various other early blooming *Umbelliferæ*, the wings are so arranged that only this surface and just the extreme blackish tips of the forewings can be seen. Unless we carefully note the exact spot upon which the butterfly pitched, we shall have some trouble in detecting it on its resting-place. The markings of the underside so beautifully correspond with the insect's surroundings that, although we may really be looking at it, we shall fail to recognize it as a butterfly. After a little practice, however, the eye becomes accustomed to the work required of it, and will locate the butterflies easily enough. The orange-tip delights in sunshine, and few will be seen on the wing on dull days, but they may then be sought for among the blossoms. If eggs or caterpillars are desired, the former may be obtained by searching the flower-heads of the lady's smock or of the garlic-mustard ; the latter on the seed-pods of the same plants. Or a female butterfly may be captured, and afterwards enclosed with a spray or two of water-cress in a receptacle that admits both air and sunshine. She will deposit eggs, and the caterpillars that hatch from these will feed upon the water-cress if this is kept in a suitable condition, which may be done by putting the stems of the cress in damp sand. Both sand and food-plant will have to be renewed from time to time, and if the cress can be supplied in flower it will be more to the liking of the caterpillars, as well as to the butterfly when she is egg-laying.

Whether undertaken with a view to deeper study, or merely as a practical life-history lesson, the experiment of rearing a butterfly from its first stage as an egg, through the subsequent forms of caterpillar and chrysalis to perfect insect, is certain to be highly interesting.

Eggs of the large or the small white butterflies, for example, are very insignificant objects that may often be seen in dozens when looked for. They will be found standing upright on either surface of a leaf of the familiar cabbage growing in the garden. Place one of these eggs, which are more or less skittle-shaped, under the microscope, and it will be seen to have several ribs extending from the blunt apex to the base, and a number of finer lines around its circumference. Probably when first noticed the eggs may be greenish or yellowish-green, but if kept under observation for a few days they will be found to turn greyish. The last change in colour indicates that the caterpillars will soon emerge from

the eggshell. To enable it to make its début the young caterpillar bites through the shoulder of the egg, and before it emerges therefrom it has eaten a large portion of the shell. It is of course exceedingly small at first, and very unlike what it will become when full-grown. Its existence as a caterpillar is of comparative short duration; but this stage is nevertheless a most important one in a butterfly's career, and full of stirring episodes. Not only has it to pass through the ordeal of changing its skin on several occasions, but enemies, especially those in the shape of parasitical flies, are ever on the watch to destroy it. The flies deposit their eggs on the back of the caterpillar, and the tiny grubs that hatch from these enter its body and therein establish themselves as non-paying guests. Caterpillars so commandeered often succeed in attaining the chrysalis stage, but this probably only happens when the parasites are later than their host in arriving at maturity. Although a large, sometimes very large, percentage of caterpillars are "ichneumoned," some certainly do escape the attention of these undesirables and other foes, and therefore reach the chrysalis stage in a healthy condition. From such chrysalides butterflies emerge in due course, the whole period occupied in passing from egg to butterfly not much exceeding six weeks in the summertime.

Some butterflies require the whole of twelve months to effect the changes from egg to perfect insect, whilst of others there will be three generations during the year. Hibernating species such as the brimstone and tortoiseshells are in the butterfly state for at least six months, but they are in a dormant condition during the greater part of that time. Even so their active life is longer than that of the small copper, of which there are three flights of butterflies in the year. The duration of the caterpillar life is also a variable quantity. In some kinds this stage is protracted over several months, whilst in others it lasts only a few weeks. Then as regards the chrysalis, some kinds remain much longer in this stage than others.

Down yonder lane, on the sunny side of the old barn, there is a fine patch of nettles, and on these we shall most likely find a colony of spiny caterpillars busily engaged in devouring the leafage, or perhaps they may be sunning themselves on the web of silk which is the result of their co-operative industry. This web may be regarded as the common hall of the colony, in

or upon which they congregate for moulting, basking, or other purposes. If the caterpillars we find are black, speckled with minute white dots, they will produce the peacock butterfly; or if they are greenish-grey or ochreous grey, with paler lines along the back and sides, then the small tortoiseshell may be expected to result from them. When full-grown such caterpillars are rather formidable looking creatures, clad as they are in spiky armour. They may, however, be handled with impunity as the apparently sharp point of the spines yield to the touch and are incapable of penetrating the skin. The repellant character of this style of caterpillar clothing is effective enough no doubt in the case of birds. It is, however, not efficient in securing immunity from the attack of parasitic flies.

Now we will look at those thistles growing on the common where a painted lady butterfly was seen on the wing a week or two ago. Yes! here are signs of a caterpillar having fed upon this plant. The fleshy parts of these leaves are completely demolished, but they still remain fastened together by silken threads. A little lower down the plant there is a freshly constructed habitation, and in it the maker will be found. Ah! there he is, sure enough. Be careful in opening the retreat, for the spines of the thistle are sharp, although those of the caterpillar are not. In general appearance this caterpillar is not very different to that of the tortoiseshell seen on the nettle, but it is stouter.

The painted lady is closely related to the peacock and the tortoiseshells, but, unlike those species, it is always solitary in the caterpillar state. The eggs are laid singly on leaves of thistle, and occasionally on burdock or mallow. The caterpillar just interviewed was almost certainly from an egg laid by a female butterfly that had passed through its own early stages in some far distant country, possibly in Africa. Almost incredible it may seem that butterflies can travel great distances, but it has been pretty clearly established that they do so.

A good many species of butterflies, and a larger number of moths, are well known to be migratory, and quite a respectable contingent of these find their way to this country. Among immigrant butterflies that arrive here most regularly is the painted lady just adverted to, next in order come the clouded yellow and its cousin the pale clouded yellow. The Camberwell beauty pays us very irregular visits, but does not reproduce its kind in Great

Britain as the other species mentioned are known to do. In North America this butterfly, there known as the mourning cloak, is very common. In Europe it seems to be most at home in Scandinavia and Germany, but it occurs in many other countries, although its appearance in some parts of the continent is almost as uncertain as in our own islands. If eggs are obtained from abroad the butterflies can be reared quite easily. The caterpillars, which live together in companies, will eat the foliage of various willows, poplars, and the birch. The specimens that come to us generally arrive in the autumn, and as it is the habit of this species to pass the winter as a butterfly and to pair and lay eggs in the following spring, the chance of these things taking place in this country are very small. There is very little doubt that specimens do occasionally hibernate here, but these are pretty sure to fall to the net of some collector when they come forth in the spring. Even if they escaped capture the odds would be against the sexes meeting with each other.

The brambles alongside the quiet lanes are in full flower, and as we pass quite a cloud of meadow brown butterflies fly up and flutter away. Stand perfectly still awhile and they will return to feast again on the nectar of the blossom which is so attractive to them. Although when on the wing these butterflies appear to be all alike, dingy brown and uninteresting, this method of observation will enable us to note that there is much diversity among them. One or two are now seen to be almost black in colour and velvety in texture. These are males, and have just recently emerged from the chrysalis. The female of this butterfly are always more highly adorned with orange, and in some of them this colour is spread over a large portion of the wings. In some respects the very fresh male meadow browns are similar to the ringlet, which is sometimes almost as numerous on the bramble-blossoms. The former butterfly may however be readily distinguished by the orange ring around the white-eyed black spot at the tip of the forewing. Presently the butterflies close their wings over their backs, and then the undersides are exposed to view. We now see that the ringlet has the wings ornamented with eight yellowish ringed black spots, and it is from these markings that the insect receives its name.

Leaving the lane, a pathway is taken which leads through cornfields to the downs. Having passed the fields we

PEACOCK VANESSA BUTTERFLY.

From a photograph by
F. Martin-Duncan, F.R.P.S.

come upon a broad strip of rough sloping ground with a tall thick hedge separating it from the downs proper. Here are butterflies in abundance, but the majority of them are white or creamy white, with blackish markings. These are the marbled whites, and it will be noted that our presence in their midst does not greatly alarm them. As we approach they take wing, but only to flap lazily away a short distance. If there happens to be a strong breeze they may be wafted in the direction of the cornfields, but they will return to their headquarters ere long. Here, too, we shall probably see a few specimens of the chalk hill blue; but as we ascend the down on the other side of the hedge these butterflies will be more in evidence. The males are blue, but the females are brown and less active on the wing than the males, and have important maternal duties to attend to, so that they are more often observed crawling about among the herbage seeking a suitable stem here, or a leaf there, upon which to place an egg or two. Later on both sexes will have retired to their sleeping quarters, the males on the flower stems of grass or other plants, and the females frequently in a more lowly position. This habit, which is common to all kinds of blue butterflies, as well as the small coppers and some others, is very convenient to the entomologist, as it enables him to examine large numbers without much trouble to himself or injury to the insect.

The exceedingly nimble little yellowish butterfly that we have seen so frequently, but which has eluded close inspection, so far, is the silver-spotted skipper. There is one on that flower-head of the low-growing thistle. As is usual when these butterflies settle the wings are closed, and only the undersides of them can be seen, but these show the silvery markings which are the characters by which this butterfly can very easily be distinguished from any other of the eight kinds of skippers found in this country.

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