THE ROLL OF
THE SEASONS

NATURE ESSAYS

G. G. DESMOND

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William F. Palmer

THE ROLL OF THE SEASONS

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A BOOK OF NATURE ESSAYS

BY

G. G. DESMOND

WITH TWELVE ILLUSTRATIONS IN COLOUR

LONDON

DUCKWORTH & CO.

3 HENRIETTA STREET, COVENT GARDEN, W.C.

First Published by Stephen Swift, Ltd., 1911

Reissued by Duckworth & Co., with Illustrations, 1913

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PREFACE

THE natural year is a ring which can be said to begin and to end nowhere. The diarist is most likely to open his notes on the first of January, because that is the day on which his artificial year opens. As soon as the winter solstice is past we look for signs of waking on the part of flowers and more animate creatures, yet many of them begin their new round of life as soon as the hush of autumn has fallen. The time of the aconite's high summer is commonly called winter. Spring, according to the calendar, does not come till after the snowdrop has blossomed and set its seed. Summer is the autumn of a very large part of the floral world and the winter of many spring insects.

I begin my book with March, partly because conventional spring begins then, partly because "The Harbingers" appeared in the first number of *The Nation*. "March Grey-face" was in its next birthday number, and I am indebted to the Editor for permission to republish all these articles. They are the impressions of a city-worn man who has found

now and then an hour to renew former pleasures among the birds and flowers. If they can give to those similarly situated an occasional impulse to take a walk in the fields or on the hills, their main object will be accomplished. I have only tried to set up a sign-post directing the traveller in a beautiful land; the words upon it have not been obliterated by flourishes, but I hope they intimate something of the joys to be found.

G. G. DESMOND.

CONTENTS

SPRING

	PAGE
MARCH GREY-FACE	5
HARBINGERS	10
WILD GREENHOUSES	15
WARRIORS OF SPRING	21
SIR SQUIRREL	26
THE EARLY SNAKE	32
POND MUSIC	38
ST. VALENTINE'S DAY	44
THE WIND FLOWERS	50
PIN-EYES AND THRUM-EYES	55
LITTLE BROWN BIRD	61
THE HOME-COMING	66
THE TRIUMPHANT BLUEBELL	72
THE RUSH FOR THE SUN	78
APPOINTMENTS	83
POCKETS OF SPRING	89

	PAGE
IN A SUSSEX HANGER	94
THE SPRING-SUMMER OF THE ALPS	99
WEATHER SUPERSTITIONS	104
THE EARLY MARKET	110

SUMMER

THE FLOWERY WAY	121
THE COMPLETE CHANGE	127
THE ONE SUNRISE	133
THE BEE'S YEAR	138
LITTLE FOXES	144
THE VALIANT WASP	150
TREACLING	156
THE CUCKOO HABIT	161
BUTTERFLIES	166
THE KITCHEN GARDEN	171
THE WATER OF THE MOORS	176
THE INFINITE SEA	181
A CITY GARDEN	186
THE REPENTANCE OF MAY	192
FULL-BLOWN SUMMER	198
THE HONEY-FLOW	204
THE VALLEY AND ITS SINGER	210

CONTENTS

xi

	PAGE
THE CUCKOO'S MATE	217
THE PUCKERIDGE	223
THE ROSE AND THE SHOW	228

AUTUMN

THE SURPLUS OF SUMMER	237
A USE FOR THE PARTRIDGE	243
THE GAME OF DEATH	248
MEMORIES OF SNOWDON	253
SEPTEMBER SUNSHINE	259
THE LITTLE LION	264
THE MODERN HEN	269
STONE-DWELLERS	275
THE SECOND SUMMER	281
REVEALING NIGHT	287
THE UNNECESSARY BROCK	293
WATER-FOWL IN LONDON	299
FOUND AT THE ZOO	305
THE BOY AND THE WILD	311
THE OLDEN FARM	318
THE SEEING EYE	324
AN OCTOBER PIKE	330
A YEAR OF SNAKES	336

	PAGE
TOWN AND COUNTRY MICE	342
WHY THE LEAVES TURN BROWN	348

WINTER

IN THE RAIN	359
BROADLAND IN WINTER	364
OUT OF BOUNDS	369
"TOADSTOOLS"	375
THE BEE IN WINTER	381
THE ROBIN	387
THE LIFE OF A FOX	394
THE WINTER GARDEN	399
THE SLEEPERS	405
FRESHENED BY FROST	410
THE COW AND HER HORNS	415
THE ROBBERIES OF THE SEA	420
NEXT YEAR'S APPLES	425
BROKEN SLUMBER	431
"THE CLANGING ROOKERY"	437
STARLINGS.	443
THE FERMENT	449
PRECOCIOUS KEW	455

LIST OF ILLUSTRATIONS

A YORKSHIRE MOOR	. . .	<i>Frontispiece</i>
		<small>FACING PAGE</small>
SPRING IN THE WOOD		14
THE FLOWERY WAY		120
BUTTERFLIES—1, SMALL HEATH; 2-6, HAIR STREAKS; 7, 8, COPPERS; 9-12, BLUES		166
BUTTERFLIES—FRITILLARY, TORTOISE SHELL, CAMBERWELL BEAUTY, AND PEACOCK		170
MINT.		172
A BITTER HERB (WORMWOOD)		174
THE END OF SUMMER		236
THE STREAM		276
GRANDEUR AND RIPENESS		282
SOME BIRDS' EGGS		312
SEPTEMBER SPLENDOUR—DRYING SHEAVES		384

TO
H. W. M.

SPRING

PRINTED

SPRING—CONTENTS

MARCH GREY-FACE.
HARBINGERS.
WILD GREENHOUSES.
WARRIORS OF SPRING.
SIR SQUIRREL.
THE EARLY SNAKE.
POND MUSIC.
ST. VALENTINE'S DAY.
THE WIND FLOWERS.
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THE HOME-COMING.
THE TRIUMPHANT BLUEBELL.
THE RUSH FOR THE SUN.
APPOINTMENTS.
POCKETS OF SPRING.
IN A SUSSEX HANGER.
THE SPRING-SUMMER OF THE ALPS.
WEATHER SUPERSTITIONS.
THE EARLY MARKET.

The year's at the spring,
And day's at the morning ;
Morning's at seven ;
The hill-side's dew-pearled ;
The lark's on the wing ;
The snail's on the thorn :
God's in His heaven—
All's right with the world !

ROBERT BROWNING.

THE ROLL OF THE SEASONS

MARCH GREY-FACE

IT is a struggle to leave bed at seven, but we are fixed for a train and it must be done. When the fishing appointment was made, we were in St. Valentine's summer. We dreamed of a sunny day on the lake wherein the big pike lurk, and we thought more of the high blue dome and a ring of green-dotted trees than of the nominal object of the excursion. To-day the morning sun is here, but the history of yesterday and several yesterdays assures us that clouds will be our midday portion. Moreover, the world has an icing of new snow, hardened by the rigour that almost glued us to the bed.

We can at any rate change the venue from lake to river. In two hours the almost unspiced blue of morning has become an unbroken cloud of grey. There is none of the light that the grass loves to play with, and field and marsh, and the bare-twigged trees, might almost have been painted from the same brush. It daunts not nor damps the pike-fisher. In fact, he rejoices while he fixes up his rod at the amber muddiness of the water. There is just so much colour in the stream as he likes to see, not so much as to make his lure far to seek, just enough

6 THE ROLL OF THE SEASONS

to blur the outline of the hooks. We never flatter ourselves that the hooks are invisible, only that they can be made so sketchy in appearance as to allow a hungry pike to persuade himself that they are a hallucination. The colour of the water being right, the descendant of Walton takes no notice of the grey sky and the grey land around him.

Slowly the firmament blackens in the eye of the north wind, as though the pigment had run there from the other parts of a wet water-colour, and, without warning to him whose eyes have been fixed on his float, a fierce snow-storm is hurled at him across the river. It makes no difference, or shall we say that, so far from worrying the fisherman, it makes him hope that this may be just the change in the weather that was needed to make the fish hungry? Other sportsmen enjoy the snow equally well. Far away, there is a rising howl that goes very well with the shriek of the wind, and in a few minutes we are aware that the hunt is coming in our direction. It comes almost as swiftly as the snow-storm. We are right in the track of the fox and his pursuers. He is on the other side of the river and wishes to cross, and we are fishing at the only bridge. There is a shaking of the laurel and Reynard jumps out, crosses the bridge till he is close on us, starts a little, changes his stride, and whisking by on nimble legs, is soon a field in front of the hounds, who have checked among our recent footsteps on the other side of the river. They do not catch their fox. He lives to remember how he sprang from his sleeping-place, on a hay-stack, right among the hounds, dodged their lumbering snaps at him, raced them till a lucky

chance fouled the scent, and thereafter, laying a double, left them baffled.

Leaving our fellow-fishers at the pool, we return to the upper river, determined to catch the big pike that lives there. The grey scene becomes our exclusive possession. The wind of the snow-storm has passed, and the tall alders bend their knotted tangle of twigs to a calm, amber-grey river. Beyond, on higher ground, wych-elms draw their delicate hatching across the mellow red-brick front of an Elizabethan mansion. A herd of fallow deer, many of them white, stand in the park near the evergreen of a large holm-oak, and some hollies whose berries just declare themselves in the grey light of our afternoon. Coming quietly and alone to the pool where the pike lies, we only faintly startle a pair of hares gambolling on the bank. They go off with a peculiar trot that makes us think for a moment they are small grey foxes. Then they sit and look back at us, and having thus assured us that we are their very good friends—at such a distance—resume their discussion.

Not till we have swung the bait with a splash nearly to the far side of the river do two hen pheasants rise from the shorn sedges and fly away. We had been visible to them for some minutes, but though their cover was of the slightest, they might have been invisible to us if they had remained for an hour. A duck, too, that had been feeding in the marsh, goes off with whirling wings, and while we were far off a pair of herons sailed lumbering away. Must everything on land and in water flee at our approach? They will come back if we are quiet enough, the little things first, and then one by one the large things, till perhaps

8 THE ROLL OF THE SEASONS

even the heron will stand in the shoal again, and make the gaudy kingfisher angry at his poaching. There is a swinging in the alder twigs overhead, and the red-and-white face of a goldfinch looks down. He is far from being alone. When he has searched rather perfunctorily one or two of the hard little cones, he flies to the ground, and then, one after the other, quite thirty of his fellows join him. Then something startles them, and up they come in one glorious body, irradiating the grey day like a burst of sunshine, emphatically the gold of heaven and not the gold of earth.

In the river there is a tiny splash as a little fish jumps out, and a rapid swell stirs the surface as the pike passes just below. But our bait has taken refuge, and the hook is fast. We do not succeed in freeing it till we have pulled up from the depths a water-lily rhizome more than a yard long, and as thick as a man's wrist. It is crowned with bright green, arrow-shaped leaves, and little round flower-buds on their strong, elastic stems. So, summer seems nearer under the water than in our grey world. "Here's provender for you, friend," we think, as we throw down the tuber. The friend in question is a water-vole, sitting on the stump of a felled elm across the stream. After the merest pretence at washing his face, he drops to his feet and glides across the stump as though on invisible wheels, flows down the steep edge, and comes into view again in a little patch of snowdrops. The white blossoms are in sharp contrast to his deep brown coat. One of them nods and falls: the rascal has gnawed it from its root. He has time for no repetition of the act, for

with a rush through swaying blossoms a second vole is upon him. There is a brief tussle, then flight, and a fresh vole is sitting on the stump, his rival swimming straight across to us. But the snowdrop-stealer's eyes are sharp, and a yard from the bank he dives with a loud splash that makes the stump vacant.

And now fishing hours are over. Western gates open in the dome of cloud, and the sun prepares to give a pale golden good-night. Water-hens are running far out in the field, and at times startling us with loud, liquid crow, close at hand. A string of rooks passes over on the way to roost, and seven dots farther off, flying in mathematical V, proclaim themselves wild duck. They are black against a pinkish yellow, which the river answers with a mellow gleam like that of half-opened hawthorn buds. And what of our fishing? It has even been a more complete blank than the fox-hunting, for we have not had a single run. Next week the big pike goes under the ægis of the Mundella Act. May he enjoy the coming summer, and keep appointment another day!

HARBINGERS

THOUGH the chiff-chaff has not come yet, signs are plenty that the diastole has begun that sets half the birds of the earth fluttering over unmeasured distances of land and sea. Expansion is the law of spring. The starling flocks have split into family parties, and these are shedding happy pairs, first claimants to eligible knot-holes in beech or elm, or to builders' carelessnesses in the walls of our dwelling-houses. The rickyards, lately congested with finches and buntings, have scattered their guests among the hedgerows. The tit bands have burst with a blaze of nuptial colour.

Nobody knows, or ever will know, how much the individuals of our resident species change ground in autumn and spring. It is easy enough to follow the seasonal migrations of a few of them, such as the plover, heron, and kestrel, which wholly disappear from their summer haunts and come back *en masse* shortly before nesting-time ; not so easy to say which is the chaffinch that has been on hand in a far field all the winter and which is the one that has just returned from the rickyard. But we marked the day last January when the wagtail, absent since late October, began again to be seen about the farmyard.

It was pleasant to see, too, by way of a single instance, that, like many migrants to and from a greater distance, he returned a few days earlier than his mate. We can also truly notch our calendar of spring by the slow climb of the meadow pipit towards the moor, where it is seen towards May. The pipit flocks of the plain have already been diminished by the return of those that in summer inhabit the foot-hills; they still retain those that belong to the high mountain.

The cottager's bees are out this sunny morning, as they have been on favourable occasions for a week or two past. They have found, however little, seemingly nothing to do beyond buzzing round as though wondering why they had been called. But the first yellow crocus is open this morning, and a bee has been seen to dust herself in its pollen. We may imagine that the first precious point of honey has been taken back to the hive, and communally regarded much in the light of a nugget found in a hitherto unexplored range of country. One crocus-cup is not enough to justify the activity of forty thousand bees. They must fly more than a mile, however, for the next blossom—the fragrant butter-burr, whose big leaves, aptly called by the French *pas d'âne*, covered half an acre of wood-bottom last summer. The lesser celandine, which is beginning to star the banks of the lane, does not appeal to the hive bee, nor has she learnt to collect pollen from the hazel catkins. But very soon the "palm" blossoms of the willow will be the centres of bee commerce, and gooseberry blossoms usher in an unbroken supply of honey-bearing flowers.

The boisterous gales have swept away the last vestige of loose hamper from the wood, as from lonely

12 THE ROLL OF THE SEASONS

hedgerow trees. Not only the dead leaves, but dead twigs and dead branches have been removed, and all that is upright is lissom and blushing with sap through the semi-transparent bark. Down below, the heaps of last year's wood-ant nests are trickling forth the half-frozen insects to bask in the feeble sunshine and regain a little of the universal force. They lie out not many inches from home, a glistening mass of soft-looking bodies and gently waving antennæ. Not far away, a far more eloquent register of the year's sunshine is found in certain old-established clumps of setterwort or stinking helebore. Starting with the first indication of a stronger sun, and scarcely pausing out of respect for the almost solid weeks of frost that we have had, they have crowned the boldly cut leaves of last year with nearly ten inches of vivid green. The full, tender-looking buds, as big as those of a peony in May, are on the point of opening into the green flower that is the next stage in the plant's wholly beautiful career. We can also find another full blossom in the wood (without counting the tassels of the dog's-mercury that are already flinging their pollen). The palm-like trunks of *Daphne laureola* bear under the glossy leaves that give the plant its specific name clusters of yellowish-green bells, wide open, and hanging in security under their roof, much as the crown imperial blossoms will hang six weeks later.

As we near the lake, deep in the bosom of our wood, a brilliant harbinger indeed shoots from its favourite perch for years past, and displays an almost incredible gleam of colour. It is Tennyson's "sea-blue bird of March." But how much more brilliant

than any English sea is the back of our kingfisher. It is a living lapis lazuli that goes threading the aisles of the beech stems to a perch that seems to him safer, but where he glows in his orange-bronze breast almost as brightly as in his blue of flight. He, the halcyon, is a harbinger, for he fled this place when he was in danger of being frozen out (and his prey frozen in), and his return means that in his valuable judgment spring has come to stay.

The pool contains another returned native, or rather, two—a pair of dabchicks that the place has not known since late October. Now that their great migration flight is over (for the estuary where they spent the winter is thirty miles away), they have folded their wings for many a month. You can scarcely persecute a dabchick into flying from its summer pool, and practically never see it on the wing throughout the summer. Walking is an art that it has almost entirely forgotten, so that the pool itself contains its active life from now till the autumn. When an inexperienced bird selects an unworthy pool that dries up early in the year, it still remains, as helpless as a fish, in spite of the wings that have borne it so bravely over miles of land. A pair of boys can chase it up and down, over and under water, run it to a stand, and kill it for the sake of its tiny breast of grebe. No woman decrees the murder—her grebe toque comes from a larger member of the genus; the boy lives more closely to the dictates of barbarism by wearing the trophy himself. Happily, the dabchicks of our pond are safe except from the gunner, and he is not allowed to walk in this wood.

With a gallantry that is not uncommon among

14 THE ROLL OF THE SEASONS

birds, the male dabchick keeps between the human danger and his mate. As that goes round the pond, he drives her towards the middle, near the edge of the weeds, and himself wheels into the more dangerous position. She dives, scarcely making a ripple, and shortly comes up with bright green weed in her bill. The frosts have not hindered this subaqueous meadow from growing; there are already a few pieces that she has cut off drifting near. Soon there will be enough to build her huge, floating nest and to warm the eggs by fermentation when she is away.

The wood-pigeon is a returned wanderer in these woods, for since late autumn his kind has been clean absent. He is now cooing persistently, or clattering through the beeches, or drifting voluptuously on still wings. There is even an incipient platform of little sticks newly laid in a pine since the gale blew itself out. Outside the wood near the manor house the rooks are playing round their nests rather than building. Three or four go towering up, and then come down with a glancing, twirling fall. Another spreads his tail into a fan, bows upon his perch, and emits a cackling series of caws that he fondly imagines to be music. Possibly he thinks (and his mate with him) that he is singing far more sweetly than the thrush, who is in fine form to-day. But the thrush at any rate outlasts him and sings alone. When he pauses for a moment there falls from the still air a tiny sound of trumpets and a gaggle of geese comes into view, winging in military formation towards the north. A far higher latitude than ours will welcome its harbingers in the morning.

WILD GREENHOUSES

THESE howling winds of March are a peremptory veto on the twelve daisies under one foot that make a spring. You can almost see the grasses shrink as the sun goes in and the rasp of the wind is drawn across the field, wilting adventurous heads that stand more than an inch out of the herbage. If worse is possible, it is when great gouts of hail or rain, icily white, come thudding down. The very rooks now nesting in the vicarage elms are buffeted up and down in the wind till they battle behind the larch wood and leave the scene to entire desolation.

But it needs only a few tree trunks to shut out the devastating wind and make a haven of peace within the wood. The sun may enter but the wind may not. The birds that have been driven from the field are here, quietly foraging in the dead leaves of last year. The leaves of the year to come are striking out boldly in many a favoured spot where a holly bush weaves an extra screen, or a dip in the ground makes a basin of sunshine which no wind can stir. The honeysuckle puts out its leaves here, though in the hedges of the field it has the prudence of the other trees. The elder is becoming so well furnished that, unsatisfactory as its boughs are, the birds are taking more than a

16 THE ROLL OF THE SEASONS

passing look at it as a place for a nest. In our southern country a nest is seldom actually placed among the straight and brittle twigs of the elder. Before the instinct becomes overwhelming, some other tree offers hospitality. But farther north you will find almost all the early chaffinches weaving their homesteads in this unaccommodating but early leafing tree.

Our woodland hawthorn has sprouted so far that we can break off the tips of green and eat them as "bread and cheese," as we learned to do soon after we learned to walk. Where the accidental collaboration of man has happened, one of Nature's greenhouses has done more wonderfully yet. A manure heap has caught a spray of the hedge and has forced it so effectively that we can count the blossoms of May upon it, and, opening the petals, can see the black-and-red stamens that will so sweeten the air on the other twigs two months hence. But come on into the wood and revisit the old greenhouses where the first blossoms have been found for the last twenty years.

This southern slope of many acres is ablaze with the green fire of setter-wort, our native Christmas rose, which has been coming into flower since the turn of the year. The spurge-laurel, too, is crowded with blossom under its crown. It was so when the frost fringed its glossy leaves with woolly crystals, and it is equally precocious in the open and in the sheltered parts of the wood. It is in the sudden notch beyond, where a plantation of spruce cuts off the attentions of the north wind, that we find our early primroses. They are rooted in the rich decay of oak

and beech, and are threatened into early rising by the boughs overhead, whose leaves will allow no flowers to blossom when they are fully come. But the army of primroses which star these banks in April will be in good time enough to get all the sky they want. There can be no benefit to reward the primrose that comes in early March before the bees and butterflies are awake or even the little beetles that swarm after primrose pollen have hatched from the cold earth. These pale blossoms peeping rarely through the old leaves are surely destined of all their race to leave no progeny. Yet year after year they are forced in Nature's greenhouses to speak of spring long before spring is a reality. So it is with many other enthusiasts. The early white dead-nettle, the out-of-season daisy, the winter red campion, are certain to die childless if not to lose the stock also as penalty of their wakefulness, yet always there are a few individuals to wave their flags months out of time.

We have greenhouses within greenhouses. A breaking up of the floor bids us lift up a wad of the felt under which all is green with the tender clover-like leaves of the wood-sorrel. The gardener cannot construct a better forcing-cover than these millions of leaves laid carefully one over the other, yielding to the gentle push of young growth and always good to keep out the few degrees of frost that filter into the wood. The bluebells have thrust their spears through in every direction, and the curious man who takes off a square yard of the cover will find the white shoots of many a summer flower. Wood-pigeons and badgers, to mention only two of a great army, know

18 THE ROLL OF THE SEASONS

how to uncover their special dainties, such as "wood-anemone seakale" and bluebell bulbs, and make nourishing and purifying spring salads of them. Feast how they may, yet the milky way of anemone blossom will not seem to have one vacancy when April comes.

The conditions that make for early blossom are not all typified in wind-breaks of trees and sheltering dips in the ground. Even a foot-deep carpet of dead leaves will not act as a forcing-bed if it lies on a water-logged soil. A bed of leaves and leaf mould, with sharp drainage beneath, will give us early primroses, even despite the east wind. The cold rain goes easily down, and then, from the warm depths, water reascends in minute aerated fragments by capillary attraction. Leaf-mould upon Tunbridge Wells sand seems to be the most favourable conjunction in this country, and it is more to account for the out-of-season flowers of Sussex than the degree of south latitude that separates it from Middlesex. The sunny hour that comes now and then in a long stretch of rain finds the well-drained root ready to respond almost at a moment's warning. A little of the starch is stirred and converted towards cellulose. If rain or cold checks its continuance, it cannot revoke it. The bulb is one notch ahead of its brother in the clay and ready to take another notch at the first opportunity, however short. It is thus that, the day after the snow has gone, a few hour's sun can paint a mountain-side with wide-open crocus, soldanelle, and gentian.

The furrows in the ploughed field are appreciably better sheltered than the tops of the "lands." But it

is on the tops that we find our only blossoms of veronica and pimpernel. The tops in the meadow will be yellow with cowslips before the furrows are yellow with buttercups, and when the purple orchis has faded from the ridge, then we can find the late stragglers in the trough. The little mounds on the common that were put there by last year's moles or last summer's ants are specially covered with evergreen cistus or the tiny promise of thyme and marjoram. Bosses of the same will greet our footsteps on the flat when summer really comes, but we can find little traces of them now. According to some, the ant-hill ought to be more forward than the mole-hills because formic acid is a great accelerator of growth. It is said to enter into the formula, by means of which Indian jugglers produce a bush in a few minutes from seed. That is fanciful, but we intend some day to put formic acid to a careful test as a quickener of growth. Certainly the ant-hills become quickly covered with vegetation, the grass blades keeping pace with the labours of the ants to cover them, and new things rooting and growing there amain. It would not be probable that the principle would retain its properties through the winter, and the ant-hills are only early by virtue of their elevation and perhaps of their hollowness.

Oddly enough, some of Nature's best greenhouses are under water. The hornwort, water-buttercup, and other pond weeds are green and pushing long before the clover has sprouted. Perhaps the water forms a lens for the concentration of the sun's best rays just as the glass of the greenhouse does. It may be difficult to think of water-weeds as feeling warm and

20 THE ROLL OF THE SEASONS

dry before that state of happiness comes to the land things, but the spring condition of each of them is comparative. The air and the earth warmed by the day's sun relapse at night far more readily than the water does. Ten degrees on the field may be lost in a night, while one degree in the pond is still there the next morning and ready to take to it another while the field is warming up to yesterday's heat. And the water-plants have no cumbrous machinery of root and root-fibre to get under weigh before they can grow. They grow entirely through their leaves and stalks, which are spread in a far more stable atmosphere than the air. They are more in the sun and less in the wind than the reeds are, and the pond will be covered with white stars before the reeds have begun to shoot.

WARRIORS OF SPRING

THE annual tilting of the planet now makes our part of it greener every day, but a close examination shows that, so far, it is from the point of view of cow or rabbit, snail or caterpillar, largely a delusive greenness. The very early flowers either come up without leaves at all, or have their leaves in some way or other protected from the attentions of the four-footed and other vegetarians. The former plan makes the floral display wonderfully effective, as testify our railway embankments, even within the limits of London proper. They are strewn with the pale gold of colt's-foot, as though the nearly bladeless gravel had received a shower of tiny stars from heaven during the night. The colt's-foot bloom has nothing to fear from the hunger of mortal enemies, but its stalk and floral envelope are covered elaborately with a thick down, well calculated to preserve them from the violent alternations between midday sunniness and the frost of midnight. The same can be said of the first leaves of the yellow mullein now crowding round the tall, bare spikes that lit candles on the embankment last summer. Thicker felt you cannot find in Nature than the spring leaves of "Adam's flannel," though you will see that, as

22 THE ROLL OF THE SEASONS

summer advances, the plant proceeds to put on something a little more like summer clothing.

What traveller has not noticed that most railway embankments are more blessed with flowers than the fields lying just behind them? We are more forced than ever to see this in these early days of spring. Besides the colt's-foot the more generous suns of the dandelion are here strewn thickly, though the children in the village have scarcely found their first blossom. And all manner of green mounds are rising, as fool's-parsley, goutweed, and other luscious things come shooting up as they dare not do in the field. The well-drained slope no doubt suits them well; but there is no doubt, also, that a long immunity from grazing is largely to account for the precocity of these ribbon-like areas piercing England in all directions. When summer has come, the fool's-parsley will stretch yards into the field, whence it will sweep in a foaming wave almost to the top of the rose-canopied hedge. But just now, not a fern-like leaf is showing beyond the shelter of the clawed blackberry briars or the sturdy, bayoneted blackthorns. The same phenomenon presents itself both on the south side of the hedge and on the north, whence we may conclude that it is not only climatic shelter that is to account for this partiality. The roots that lie out in the field are the inheritors of an experience that taught that it is not worth while coming up till there is plenty of grass to offer better attraction than parsley for the cattle that inhabit the region.

Poison is the chief weapon by means of which the early plant preserves its leaves from the hunger of other creatures. Green as the world is, the rabbits

are still nibbling the bark of standing or thrown trees, and the cow goes questing among verdure for a sweet bit of last year's grass. As we pass an old wall, we find that some disintegrating force has thrown out of their cranny a bundle of snails, still glued to one another in winter sleep. There is as yet nothing for them to eat in the wood where they revelled last summer. The spurge-laurel, not content with rearing its crown of leaves high on a palm-like trunk, has made its leaves and its yellow-green blossoms one of the most poisonous things on the hill. The bright green fountains of the setter-wort are equally unwholesome, and advertise the fact in an odorous manner, that has given it the name of "stinking hellebore." But here and there some curious rabbit has sampled the setter-wort. Why does it shine like green light through the wood if it is not to be eaten? We find the place where the rabbit sat on the side towards which the blossoms nod, and where he has dropped every particle of the green-and-purple bell that he had thought to eat. But snails and slugs will eat even poisonous things, as witness the white bites seen on the most potent of fungi in the season of fungi. The bluebells and daffodils, now spreading their greenery apace, rely on more than mere poisonousness to save them from snails. Their oxalic acid is distributed among the desirable green tissue in the shape of needle-like crystals, capable, if not of breaking the snail's teeth, of piercing the soft parts of its mouth or digestive apparatus. Microscopic as are these raphides, they are formidable enough to cause serious trouble to those engaged in picking daffodils for the market,

24 THE ROLL OF THE SEASONS

giving them painful and even disabling sores, though the simple precaution of oiling the hands before work is said to break down the flowers' defence. No plant is better armed in this respect than the wild arum, whose inviting leaves we find unrolling in every corner that the "lords and ladies" love; and no plant can display foliage so intact from the bite of a slug. Yet it was shown by Stahl that snails would greedily devour leaves that had been treated with acetic acid, and the raphides thus dissolved. Our tender lilies, then, must be set down as plants that protect themselves from destruction by means of prickles.

Tender as the young nettles are, there is none but man to hinder them as they spring up among the hard, dry stems of last year. They are at liberty to choose their own time and place, and they elect to begin the year early. These spring things refuse to take the risks that the soft summer blossoms cheerfully face. The game of producing millions that a hundred may survive is all very well for June, but it will not do for March. Even the modest violet, that delights us with its scent, most probably uses the distinction as a means of keeping away something hungry. The primrose, on the other hand, is good eating, as may be seen by adventurous roots nibbled short off. But, numerous as primroses have already become, their numbers are as zero by comparison with what they will be a month hence. It is only the erratic primrose that blossoms before Lady Day, while better protected flowers put out their whole bloom in this blustering month of March.

It is plain that the blackthorn buds are coveted.

Each button now nearly open sits behind a long, sharp bayonet, well fitted to guard it from its infancy till the time when it has been succeeded by leaves, and they again by fruit. The fresh leaves of the hawthorn are just as effectually guarded, and in this case we may note that the upper branches, which are beyond the reach of any grazing animal, are far less prickly, and often entirely without spines. Grant Allen noticed the same thing with reference to the holly, and drew from it his strongest conclusion that the prickles of such plants are evolved by the attentions of grazing animals. It was, perhaps, only half the story, but that does not excuse the modern scientist for insisting only on the other half. According to some of them the prickles, which can usually be shown to be modified leaves or branches, are the result of starvation, and are only to be found on plants having dry habits or conditions of growth. Even the water-soldier, that lives up to its neck in water, must, for the purposes of this argument, be written down a xerophyte, a fact that makes the theory sufficiently absurd to prevent it from becoming very popular. We prefer to believe that necessity has taught the blackthorn, the bramble of rose or blackberry, the holly, and others, to protect themselves from the molestation of cattle by converting a portion of their greenery into spikes and prickles. They preserve their beauty at the point of the sword. Meanwhile, high above their heads, the unprickly elms are one mass of rosy bloom. They and other notable ones are removed by a generous growth from the necessity to fight for the privilege of an early spring.

SIR SQUIRREL

THE swinging song of the ox-eye scarcely breaks the silence of the woods ; it seems merely to give it a tone. The tall trees, mixed Scotch pine and beech, throw an open tracery of shadow on the sunlit ground that makes it resemble the floor of a church. But a most unchurchlike interruption occurs when, with an angry cough, the squirrel of that particular glade dashes after an intruder he has espied. The two animals, each half-tail, both in length and apparent bulk, thread a few zigzags among the pillars of the aisle, then one catches the other, and they roll over scratching and biting, more like rats than the dignified creatures they are generally imagined to be. Then they start asunder, the intruder to go back to his proper land, the defender to spring to an advantageous fork whence he can survey the late field of battle.

There he sits now, just as the picture-books would have him sit, his acanthine tail following the curve of his back, and waving into a tip that matches the tufts at his ears and make him a better-looking animal in winter than in summer. Squirrel? It looks like a superior portmanteau word savouring of scurry and whirl—a picture that the name usually calls up. Ah!

there he goes scrambling up a pine stem, spread-eagled on the bark as he grips and springs all fours at a time, then disappearing, to reappear in his wild spiral course. Squirreling seems to be the only word for it. But the fact remains that the name as the Greeks gave it him (*ski'-urus*) signifies merely shadow-tail, which may be considered rather a title of dignity than a character for *harum-scarum*.

Wild as was the scamper of our squirrel up the tree, he is very loath indeed to take himself entirely out of our cognisance. With the monkey-like curiosity of a tree person, he delights to watch all our doings, and, like Mr. Kipling's bandar log, he seems to have a passion for attracting notice. The best way to find a squirrel is often to sit quietly in his wood and wait till he and his mate, or a friend or an enemy, come and run races round you, or perhaps jump into the tree above you, and begin "accidentally" to drop rejected husks of chestnut or acorn upon you. But in March he is neither at the height of his frolicsome humour nor are there acorns or chestnuts to eat, nor the leafy security that brings out the animal's full impudence. His scolding from the tree-top is almost entirely genuine now, for we are sitting not far from the drey in which his young are to be born (where, indeed, if they are an early litter they have already arrived), and, the parent squirrels are really anxious that we should leave the place in peace.

Whether his open-air life be taken as a cause or as an index of his intelligence, it is fairly certain that the squirrel is naturally the cleverest of the British rodents. The house-rat, which has some special advantages, has developed a low cunning that stands

28 THE ROLL OF THE SEASONS

him in good stead. The rabbit attempts to inherit the earth by meekness and multiplicity, while the slightly loftier intelligence of the hare is surrounded by serious limitations that make it the easiest possible prey of the poacher who knows his business. The squirrel shares the wisdom of the vole as a layer-up of summer stores for winter consumption, without becoming, like the vole, a dull, brainless miser for young kestrels and owls to feed on. He imitates the dormouse's habit of spending the winter as a season of retirement and rest, but does not, like the dormouse, sleep the whole time away, sunny days and all. He constructs a nest on the harvest-mouse model, so as to be out of the reach of most terrestrial animals, but has hit upon the idea of further baffling pursuit by having two or three secondary homes.

It is not fair to call the squirrel, as Mr. Millais does, "the miser of the woods." It is true that when he finds winter coming on he hoards a little of the plenty he has been revelling in. But he does it so carelessly and light-heartedly that he frequently fails to find his hoard or hoards when he wants them. He is not a miser, because he does not put by a particle more than is necessary. He rather fails by saving too little, and he squanders magnificently in the full splendour of autumn. But when his cache is formed, he does not lightly open it. He comes out on many a sunny winter day without paying a visit to his pantry. He lives on the country as long as there is anything to be had. We come upon him at this time nibbling fungi from a rotting log, and many ground mushrooms besides the one

that we regard as edible. It is even said that the squirrel eats some of these growths that our skilled mycologists know to be poisonous.

It is now, when the squirrel likes to be active every day, with a waste of tissue consequently great and when the new foods of spring are very meagre and unpalatable, that our friend finds it imperatively necessary to break into his store. It is just possible that, so far from going deliberately to his cupboard, he only stumbles upon it by a sort of accident. There are single acorns and nuts to be dug up by a lucky finder, bulbs rendered at once visible and rather nasty by their sprouting, and at last, while one is poking about here and there, behold a heap of nuts all in one hollow stump. Who can have put them there? Was it that rascal I just chased from my domain, or can it have been myself in my incarnation of last summer? Without asking himself a superfluity of questions about it, the clever but slightly prudent person of the woods takes a meal from the welcome store. And here he shows his vast superiority over the wood-mouse by opening his nuts in scientific fashion. Instead of taking a long time to nibble a hole through any portion of the shell, perhaps the thickest, he attacks the nut along the lines of its anatomy, gnaws a chip out in the right place, and jerks the shells apart precisely as the learned ploughboy does with a jack-knife.

Whether he finds a hoard or no, and it must be remembered that squirrels exist in some districts where storable fruits are hard to find, Lent is the squirrel's lean time. His larder may be expected to be empty before green shoots are many, though he

30 THE ROLL OF THE SEASONS

manages to get at the sap-growth before it is visible to the casual eye. This morning he was nibbling the horribly bitter and resinous top shoots of a *Wellingtonia*, thereby incurring the wrath of a certain sylviculturist. A meal in which we should be slightly more likely to join him is the one he took a day or two ago from the sycamore. With his ivory chisels he stripped off the bark in straw-like shavings, and licked up the soft cambium, sweet with maple sugar. And so that nothing should be wasted, he gave the vegetable wool he had made from the bark to his mate, who lined the nest with it. By such means he scrapes along till the first glad day when he finds that the wood-pigeon has laid fresh eggs for him. Of eggs he eats a good many. And if they should sometimes be hard-set, what of that? And if he should come too late to find them eggs at all, he distresses us by sitting up with a young bird in his hands and eating it as he does a sweet chestnut.

Let us leave a horrible subject and discuss those hands. The animal that takes reasonably to arboreal life is well in the way of intellectual advancement. Apart from the fact that *Athené* rules the air, and may therefore usually be found on the tree-tops, any stimulus that makes an animal begin to use its hands is good. He must not specialise too much, like the sloth which cannot get down from the tree he lives in, and is the emblem of stupidity. But if he practises such all-round excellence as the squirrel is master of, swarming up trunks, balancing on boughs, grasping twigs, leaping from tree to tree, and never forgetting to keep up his running powers upon land, his foot is on the ladder that may lead to a university career.

The first time our squirrel grasped a bough, he made a little mistake that placed him inevitably in the second class among tree animals. Instead of putting his thumb upon one side of the object and the fingers on the other, he wrapped the whole hand round one way. That is the right way to hold the horizontal bar, but if one uses it on all occasions, the thumb is found to be of no use. So the squirrel's thumb is to-day a tiny member in process of disappearance. His paw is not the thoroughly clever instrument that the monkey's hand is. He holds his food with his two hands when he eats, but so do the mice, the rats, and the voles. None of them—the squirrel included—uses the hand to reach food, or even to an appreciable extent to manipulate material when building a nest or covering up a horde. Offer a monkey, or even a lemur, a nut, and he takes it politely with his hand. The squirrel takes it with his mouth if he can; he cannot, to save his life, put his hand through the bars of his cage and take it in. At least one naturalist describes the squirrel's thumb as "almost opposable." Let us hope that the little animal has at length discovered his mistake, and is calling back the almost vanished limb to a career of human usefulness. A being of our shadow-tail's vivacity and human curiosity and vanity cannot be on the down grade. So we take a solemn farewell of our little brother, which he resents by barking at us like a very prairie dog.

THE EARLY SNAKE

THE windows of heaven are opened, and, instead of the deluge that is usually associated with the well-known words, a flood of thrilling warmth is poured down. The scent of sunshine climbs on the breeze and enters every room in the house, so that long before the garden is reached we know that spring is warmly kissing the earth. Daisies are wide open on the lawn, the gravel path is warm to the touch, a slight shake of the box sends the pollen flying from its myriad flowers. Lastly, it is Gossamer Day. This decided rap of Spring has called out the first really successful draft of its army. The little spiders have responded *en masse*, and, in the few hours since high dawn, have spun the world over with glistening threads to catch the sunbeams, which run along them in orange and violet, or translate their patternless mass into white mist. And now that the warm earth is sending up a current of expanded air, the little aeronauts are launching themselves by thousands, and setting their invisible prisms at all angles in the open sky.

It should be the day of the first snake. At any rate, the thought gives an objectiveness to a walk round the woods, with a call at each haunt that knew

a snake last summer. It is useless to look anywhere so early in the year for the biggest grass-snake ever seen, one that seemed fully five feet long, that used to lie out there not far from where the marsh-marigolds are beginning to look so golden. She is certainly still coiled up asleep and unconscious, with others of her kind, in some deep, dry hole, and the early snake, if found to-day, must be a viper. For the viper, like its prey the mice and voles, is a light sleeper and usually an early waker. The first young bird is by no means safe from him, and the robin has already scooped out the cup for her nest in the mossy bank near the path through the wood. It is only fifty yards away from the first of our viper haunts.

The sun beats well to-day on the long bank or little hill, the crest of which is bounded by a dry wall backed by a larch wood. Here, when the turf of this warm limestone hill was dotted with ripe wild strawberries, a pair of large vipers were always at home. Their keep was in the wall, to which they used to glide when alarmed, first the more active male, then the heavy female could be seen within the entrance to her narrow den, slowly withdrawing fold by fold, till at last her kitten-like tail was tucked safely away.

It is not usually so easy to analyse the order of the viper's going and coming. As we walk along, thinking of anything but vipers, there seems to rise out of the ground the picture and then the model of the beautiful serpent. Modest as is its pattern of grey and black, it ends by arresting the attention with the inevitableness of mesmerism. First the

34 THE ROLL OF THE SEASONS

vision seems miles away, then appears to float on the retina as a hallucination, and at the end of a second there is the viper just in front of the feet, warning us not to step farther, beckoning us to come and catch it. It is usually flung there in a careless spiral, and looks like a whip-thong plaited in grey and black, or sometimes yellow and black, with the overlapping black parallelograms running down the middle.

Then, with mysterious suddenness, the viper vanishes. It melts into the earth, if things are what they seem, though reason tells us that it has glided to its den, perhaps a yard away. There is nothing more elusive when one watches a machine than the polished thread of a twisting screw. It is continually moving forward, yet remains in one place. The spiral of the moving snake gives us the opposite impression. The latter coils of it remain in vision after they have moved in substance. If you wish to catch the tip of the tail, you must grasp at the middle, and that with all the swiftness at your command. And then, by placing your (preferably harmless) snake in the middle of the field, you can see how slow is its real progress by comparison with the instantaneous way in which it vanishes in conditions of its own choosing.

It is far more often the female than the male viper that we find thus carelessly flung out across the path to catch the full force of the sun. It thus happens that nearly all the illustrations in the natural history books are taken from this sex, distended with eggs and flattened out in the enjoyment of a maternal sun-bath. That is the time when the most casual of

naturalists has an opportunity of becoming acquainted with the viper. It is then that she lies about with very little concern for the convenience of others, and it is quite easy for careless people to tread on her and get a particularly dangerous bite.

It is idle to look to-day in every place where we found our venomous snakes last June. It is only in the warmest corners that much can be made of the March sun-bath, even when the elements are so propitious as on this Gossamer Day. Our best viper holt is at the corner of a stony oat-field in the angle of two of the dry walls of the country. Here, when the oats were up in the field, the incurably dry corner held nothing taller than shepherd's-purse, and was decorated rather than covered by straggling scarlet pimpernel. Then came the unploughed edge of turf, with long, wiry grass that hid the snakes in their retreat towards the complete fastness of the wall. They took the sun in tumbled coils at the edge of the long grass, or stretched luxuriously on the warm, gravelly soil of the field.

The place is barer now. The crop that succeeds the oats has scarcely broken the ground, and the pimpernel is unstraggling and without blossom. But every little stone in the soil has absorbed its share of sun, the walls are full of it and reflecting a surplus on the favoured corner, and it is likely that the winter retreat of the vipers is very near. And there, in a kind of semi-circular nest, sleeps in tumbled coil one of the six that daily took the sun here of June mornings.

It is, at this slow time of the year, an easy matter to put a stick among his coils and throw him out into

36 THE ROLL OF THE SEASONS

the field. He begins to flow back with unerring instinct towards his den, but we baffle him, and at last bring him to bay at a hopeless distance from home. And now see how unlike he is to the Mrs. Daniel Lambert that sat for the tribal portrait in the natural history book. Instead of being short and squat, he is fully as elegant as the grass-snake. So far from being of a dingy, repulsive drab, his ground-colour is delicate ash-grey, on which the thick zigzag is cleanly drawn in rich brown. And the broad, flat head, with protruding jaw corners, that the artist throws in, out of regard for the writer's insistence on the point, is not a whit more noticeable than in the grass-snake—indeed, less so, thanks to the airy cross-bones pattern and the absence of marking near the outline of the cheeks.

Just such a viper as this was the first one we ever met outside a book, and so little did it resemble its portrait that we confidently seized it, tied it in a handkerchief, thrust it in a pocket, and carried it home. It was an early snake, but even allowing for that, we never hope to meet with its like for mildness of manners. It submitted to the close and curious inspection of several members of the family. But eventually it resented being stroked on the nose by making a lightning snap at the finger, though it fortunately failed, for some unknown reason, to get its fangs in. We know more about vipers now, though possibly power has not increased with knowledge. Instances are not rare to show that complete boldness answers with the viper as with the nettle. There is a small girl living in the keeper's lodge who, when she was smaller still, found a viper with a

young bird in its mouth. Being an ex-officio member of the Dumb Friends' League, she opened the monster's mouth, took out the fledgling, and carried it home to give it the decent burial that innocence deserves.

FOUND MUSIC

POND MUSIC

TWO days ago we might have offered a reward for a single frog and, unless some expert had taken up the quest, kept the money in our pocket. They were stowed away beyond a suspicion of their whereabouts. By diligent groping in the soft mud under the steep side of the pond we might have brought up a fat and unresistant green-and-yellow monster, for one of the enigmas of the frog is that, although he stays under water with difficulty in the summer, he often hibernates in the mud. Or, by scraping many an acre of dead leaves and splitting many a likely rotten log, we might have found a frog or so of a dryer taste in winter retreats. But never a frog should we have met in a long day's ramble in those districts where they are wont to hop out from under the feet as one goes looking for sun-dew or musk-orchid.

Yet to-day the prevailing note is frog. One was found under a tall drain-pipe that had been lifted to reveal the growth of the rhubarb. How it got there was a mystery as unsolvable as King George's apple in the dumpling, and a further mystery was how it would have joined the spring revels of the frogs if we had not happened there to open the door of its bed-chamber. Another was seen hopping with immense

purpose across the lawn and over the sunken wall, as though it had been a mere step instead of a precipice five feet deep. And a third passed in front of the paddock-gate without diverging a hair's-breadth when it swung close over its head to let us through.

They are all making for the pond in which two days ago there was no evidence whatever that the day of the frogs' carnival was at hand. The pond-weed and the horn-wort were pushing up, but were still far from the top, some boatman-beetles and a water-scorpion were moving on the clear gravel near the edge, and two or three pairs of newts were floating lazily over the deeper spaces. But they all looked as though they could feel the keen north-easter that chilled us land animals, and as though they regretted having got up so early.

To-day there is no room anywhere for newts or water-beetles. The air is full of a deep, mellow hum that matches spring sunshine as only that sound can, and it comes unmistakably from the pond. We all know the vibrant cooing of the house-pigeon, and now and then we learn how grand is the chorus of thirty or forty of them throbbing it out together, as they and their consorts take the sun on the best slope of the roof, or on some warm grass plot. The frogs' chorus is much the same. It is also produced in the same way—from a well-inflated throat—and of course addressed to the same theme.

A cautious approach reveals the whole surface of the water a mass of snow-white bubbles, the inflated throats of the performers. "Croon, croon, croo-oon" goes the song, each throat's contribution being but slight in volume or continuation, but the whole rising to an

unbroken roll that fills the ear to the exclusion of all other sounds. A few heads disappear while we are getting cautiously into a front seat. They come slowly up, one by one, first as shiny noses, then with the added twin bumps in which shine the jewel-like eyes, finally buoyed out of the water by the filled wind instrument beneath. There is nothing more luxurious in nature than the body of a frog balanced in water by its exactly appropriate specific gravity, all the legs thrown out with the air of having nothing to do, the sunshine sparkling on the shiny nobbs of its head freshly dipped in the nether element. Everything looks as warm as the scented zephyr that plays on the cheek of the onlooker, though as a matter of fact a dip of the hand in the water alters our opinion. But it is the frog's element, as testifies his happy croaking.

This is neither the only nor the largest pond of the area that must have been drained for the supply of so large a concourse. It has been, however, for many years the frogs' pond. A frog, however musical, who got into other water and raised the spring rallying cry, would sing in vain—that is, if his hope was to call together anything like a congregation. He might secure a mate, as happens now and then to such solitarian, but the paddock-pond would remain the great meeting-ground of the clan. Yet there have been times when all the frogs of a neighbourhood have been found spawning in a miserably inadequate pond, or even in a patch of rain-water that evaporates a few days after the masses of eyed jelly have been left there.

The ordinary person finds a difficulty in knowing

the frog from the toad. Not so the frogs and toads themselves. The common toad observes its spawning day about ten days after the frog. To be precise, the observation of a few years places the toads' day exactly eleven days after that of the frogs. The music of the one fails to awaken the others, at any rate as a class, though now and then we hear a very inexperienced toad lift its comparatively high shriek in response to the crooning of its smooth-skinned cousin. Only once have we seen the whole body of both amphibians meet in one pond, and on that occasion our statement that they know one another part could hardly be justified. Frogs and toads were mingled in a promiscuous courtship, and the shrieking and the crooning made a chorus never heard before or since. But in the afternoon the toads began to withdraw from the pool, and the next day, on a most diligent search, not one could be found.

While the sun shines the music continues. We hear it far away in the wood where we have gone to see the early humble-bees sucking the sallow blossoms ; they hear it in the farm-house dairy, and know it for an undoubted token of spring, and incidentally as an earnest of much food for the ducks ; the ploughman hears it as he turns his team, and though he mentions it to no one at the day's close, it may be true that it makes his heart rejoice. Perhaps it is truer still to say that he feels it than that he hears it. It is part of the same sensation as the drifting scent of larch blossom, the palpitating up-current of air from the heated stone wall, the thrill of spring warmth through the densest clothing.

Ducks are not the only enemies of the masses of

42 THE ROLL OF THE SEASONS

spawn that will soon break the surface of the paddock-pond. The water-boatman will take his infinitesimal but oft-repeated toll. Greater than he, the jawed larva of the giant water-beetle will suck the wriggling tadpoles. Newts, hungry after their own spawning, will snap them up and swallow them by sixes and sevens at a meal. Snakes not of a size to negotiate grown frogs will come to the pond and catch them with wonderful grace, at a time when the tadpoles are large and of intelligence enough to fly like minnows before a pike. Not to enumerate any more disasters, the horde will be decimated and the remainder decimated again and again, but there will remain enough to blacken the shallows with life, to scatter the margin with complete frogs, as with seeds, and to provide the high road half a mile distant some July afternoon with all the appearance of there having been a descent of froglets from the clouds.

Few stories are so circumstantial as those that tell of frogs having come down from the sky. Two Frenchmen are walking along a straight road through an arid country when a peculiar black storm overtakes them. It bursts and showers on their astonished heads, not merely rain, but myriads of little frogs. A number of workmen are engaged in repairing the roof of an Essex Church when a similar shower comes on. When the storm is over, behold the flat roof of the church tower and the rain-water spouts contain numbers of little frogs! Such are the stories. They only become unbelievable when an explanation follows of how the frogs got into the cloud. One theory is that a wandering whirlwind took up the contents of a pond and put them down at a place far away. Another

suggests that spawn was so taken up and remained in the clouds throughout the time of growth, for all the stories agree in that one fact that it is always mature frogs that are rained down. And it is only mature frogs that will be found on the high road some evening next July.

ST. VALENTINE'S DAY

It is usually accounted a myth—at any rate, by those who live in the towns—that the birds pair on St. Valentine's Day. But it may confidently be stated that whoever goes out into field and woodland to-morrow, if it be a day of average spring progress, and not one of erratic set-back, will see many sights and hear many sounds to warrant the belief that now the advance on spring begins in earnest. The plovers, beautifully groomed and crested, will be walking the fields in pairs and bowing to one another in their pretty way; the wood-pigeons will be cooing ecstatically; the woods will echo with the ringing cry of the ox-eye; you may see two robins at once instead of the moody Laras that have sentinelled the path through the winter; the jays will be lolloping about so as to show one another all the beauties of their plumage; chaffinches, greenfinches, hedge-sparrows, and yellow-hammers will be singing love-songs or battle-songs, according to their nature, and making the latter very realistic action-songs.

We know that this will be so, for the simple reason that it was so, to some extent, yesterday, and one or two yesterdays before that. Those sturdy ruffians, the ravens, have even built their nest, which, perhaps,

contains an egg or two. These obviously life-mated birds do not recognise social duties, and have not, therefore, any kind of honeymooning to observe after the breaking up of a winter flock, as most of the other birds have. The flocking habit of nearly all our birds makes it almost impossible for us to say whether they mate for life or no. It may be that those spring battles in which the valiant chaffinches, for example, indulge, are normally undertaken by birds of last year who have never mated, and merely observed by the older birds as a knightly ceremony to please their secure hens. We cannot urge so flattering a presumption in favour of the sparrows, a chattering string of which passes the window as we write. Sparrows are never satisfied with the allocations of St. Valentine. Long after nests have been started we see these bickerings, in which those who ought to be staid married people join, openly flying down from their nests when the nucleus of a sparrow tangle passes their way. And the ungallant sparrow is far less occupied in tilting with rivals for the smiles of a lady than in joining them in one universal attempted, though not very successful, bullying of the hen that is the centre of their group.

Such are the sparrows, but we see no reason why the flocks of splendidly coloured tits should not split now into the identical pairs of last summer, and leave only the young to make new alliances. It is a point fairly easy to test by means of the nesting-box. We can, with practical certainty, get the birds into as many boxes as we like, and at the right time it is easy enough to catch them and mark them with tiny leglets to be looked for again next summer. As far

46 THE ROLL OF THE SEASONS

as casual observation serves, the same birds, and both of them, do come again to the same nesting-site. They scold us from the same bough and, as it seems, in the same voice and vocabulary, and use the same perches when they feed their young. Our belief that they are the same pair is a tender one. Perhaps we fear to put it to the test. At any rate, there is something charming and not unnatural in the idea that in the season when there is no marrying or giving in marriage each pair sinks its individuality in the social amenities of the flock, and that the return of spring brings them together without regard to the other attractions that the party affords. However that may be, the tits that have attracted one another draw imperceptibly apart day by day as the sun returns to our hemisphere. There is little or no fighting about it. Gorgeousness of plumage wins the day—at any rate, in the case of a new alliance. The school cry of food found has a special significance for her who has looked favourably upon the splendid gentleman who utters it. By and by it ceases to be a pack-cry; it becomes a mate-call, and then there is built upon it the love-song. The pack becomes not merely no necessity, but a bore, and the two wander off into the wood alone, house-hunting.

When the tit band breaks up, it releases one or two other interesting co-foragers. Our best band this winter, which consists mainly of blue and great tits, has included most regularly a lesser spotted woodpecker. He is a rare bird, and has already departed in quest of his mate. Possibly they arranged some sort of tacit rendezvous last autumn. It may be that he knew what other band she was in, and that they

have seen one another frequently during the winter. The delicate little pearl-spotted tree-creepers have both been with the tits all the winter, and so no doubt assails their record for constancy. Their call has grown longer, sweeter, and more cheerful, and we are listening hard for the love-warble, a zither-like tinkle so high and rare that scarcely one naturalist in a hundred has heard it. The nut-hatches have been sometimes together and sometimes widely separate; but now they are constantly together again. It seemed to us that one day this week he elaborately pretended to be a stranger, wooing, as a new love, his mate of last year. He sat far apart on an orchard bough, which, for this one occasion, he straddled with his claws, instead of sitting in a line with it, and he threw his head up in an entirely new pose, and see-sawed his doleful song to the heartless solitude. And she, coming near as the tits wandered along their diurnal round, caught the song, no doubt with a start of simulated astonishment, and came to see what clever troubadour it could be that warbled so sweetly. And now, perhaps, the tit band will see her no more till next autumn.

The fable, if it should be one, that the birds mate on St. Valentine's Day must not be shattered. Blessed be the man or woman who goes out on that very day to see whether or no it is so. Any one who does so is certain to see many sights to support the theory. Some, but not all, will have been seen some days earlier by careful observers who do not wait upon dates. The lark is high in the sky, gurgling out rich globules of song; the thrush gives his melodious recitative of "I know it, I know it";

48 THE ROLL OF THE SEASONS

even the rook flirts his tail and spatchcocks his wings, and is like one attempting a tune on a motor-horn. The performance is not absolutely without rehearsal, nor is it completely full-dress. But it is now, for the first time, of a strength that justifies the poetic ones in declaring that here is a critical day in the solar calendar.

Ever since the annual course of the sun has been appreciated, the half-way day between the winter solstice and the vernal equinox has been specially observed. It was by a kind of inevitable fate that the observance of this day of St. Valentine was ever introduced, a solar feast, into the midst of a Christian year. If Romulus and Remus were ever suckled by a wolf, it could not have happened in mid-February, since wolf-cubs are born in May. So the Roman feast of the Lupercal was a poorly disguised foundation on the midwinter solar festival of the Egyptians and older people. Its nature can be gathered from the opening scene of Shakespeare's *Julius Cæsar*:

Enter Antony for the course.

CÆSAR. Calphurnia,—

CALPHURNIA. Here, my lord.

CÆSAR. Stand you directly in Antonius' way,
When he doth run his course.—Antonius.

ANTONY. Cæsar, my lord.

CÆSAR. Forget not, in your speed, Antonius,
To touch Calphurnia; for our elders say,
The barren, touched in this holy chase,
Shake off their sterile curse.

It was as a counterblast to the pagan Lupercal that the Christian Church, not wishing to strain the bottle with wine that was too new, instituted the

Feast 'of St. Valentine. It was probably a purer feast, but it must have appeared to some as a little hypocritical. It has gone from the calendar of the Church, and is almost obliterated as a popular sunmark. But it can only really vanish as a fact when the light of the sun dies down or the inclination of his orbit undergoes radical change.

THE WIND FLOWERS

ALL the morning the snow has been sifting down, till the greenest of the grass is in aspic, and only the long grey blades give colour to the fields. Snow-scuds have obliterated the other side of our narrow valley, and the black shadow of discharging clouds has deepened the wintriness of the picture. But now, as though by magic, the clouds have drawn away and are skirmishing on the distant hills; the snow-scuds have ceased, the sky is veined with blue, and the sun, breaking through, turns our dim valley actually into a vision of rosy loveliness. The snow is still there, and the black trees show white skeletons; but the eye is caught before it reaches the grey of the under-world by the blossom-crowned elms. We have seen the maze of twigs thickening as the tips swelled for many weeks past, but not till to-day have the madder-pink blossoms responded as they do now to this sudden gleam of sunshine.

The elm blossom is seldom seen at close quarters, and by thousands upon thousands of us not all. The rosy clouds of the elm tops in March are certain to charm those who look at them, but few are willing to give the tiny multitude the name of blossom. Only when the woodman has thrown one of the great

shoots of the hedgerow in spring are we countrymen forced to see that here are clusters of pollen-producers as worthy of notice as the red tails that fall from the poplar. In London the diligent wood-pigeons throw down the elm bloom in bunches, so that the saunterers by Rotten Row wonder what manner of tree it can be they are walking under.

"The murmur of innumerable bees in immemorial elms" is not the legitimate murmur of honey-gatherers and pollen-carriers. If it is heard at all (and the poet may be wrong) it comes in summer, long after the blossoms have blown and withered, and the bees are attracted by the ooze of the well-detested honeydew from the bodies of aphides. The incalculable amount of pollen that is being produced now is all for wind distribution. It must be produced by the pound for each stigma that is to be fertilised. The whole atmosphere must be filled with it, so that a tree in each parish may get its share. And, even then, to what end, so far as our elms are concerned? All these acres of rosy bloom, pollen grains more numerous than the snow that has fallen in a week, a million eager stigmas touched—and never a seed that will sprout. For the exotic elm that has in a few hundred years spread throughout the land by means of suckers is doomed in our country to perpetual sterility. Marvellous that it should bloom year by year with undiminished assiduity!

It is, of course, the season of wind flowers. Who would have the catkins fling out their pollen when the world is full of sticky new leaves and all manner of summer distractions to the messengers of love? Even with the world in bare branches, the chance

52 THE ROLL OF THE SEASONS

seems less than infinitesimal that the hazel which some bird has planted on the edge of the quarry, among the beeches, should be fertilised by any but its own pollen. But many bushes within half a mile have now, not for the first time this winter, hung out their catkins at full length. The pollen has fallen out of each capsule on to the back of the next one below it, and it needs the smallest shake to set the cloud flying. It rises on the air like smoke. Like smoke or steam, we see it only for a moment while the separately invisible particles are crowded together, and then it vanishes as though it had never been. Just below us a whole coppice smokes as the wind comes and shakes every tree at once. All that dust, too, vanishes before we can count ten, but each of those million million grains of pollen is sailing its own safe barque on the rising air-current. They distribute themselves through the air more rapidly and doubtless just as evenly, as a drop of dye might spread through the lake. The atmosphere of our valley is pollen. Each cubic yard of it, at any rate, is capable of fertilising one of those tiny red stigmas that the hazel above the quarry has put out to catch nuts with.

Wherever we look we can find catkins full of powder, either now or very soon. The brook is one continuous line of alders, and now along their whole length a yellow glow of new catkins gleams through the black old cones that have been their feature through winter. Shake the yew or the box on a sunny morning, and you will be rewarded with just the same puffs of smoke that came from the nut branch. Soon the ash, the oak, and many other

trees of the roadside or the garden will be puffing as vigorously, though the first primrose will distract our notice, and we shall not see them. But every one will discover when the larches take up the firing. The air will be heavy with the scented particles, and the glowing red tips of the sweeping lower branches will get attention at the expense of every flower of the field.

The larch captures us by the most material of the æsthetic senses, the nose, the vestibule of the stomach. There is no spring delight keener than the scent of the larch when it is in bloom. We have declared the presence of the larch and other conifers to be health-giving, only, it seems, because we can smell the good that they are doing us. Possibly they are good because they make us sniff our lungs full occasionally. Perhaps the actual particles, whatever they may be at other times, and especially the pollen grains in spring, do us some good, may even feed us through the mucous membrane. There is no food quite like pollen. So the bee finds, which on pollen does the greatest work of its size of any creature living, and so we believe the chemist finds when he analyses this richly nitrogenous substance. It may be because in spring the whole atmosphere of the world is full of assimilable nitrogen from the stamens of the wind flowers that a more learned generation than ours ordained the Lenten fast.

The snow has scarcely checked the ardour of the willows and the willows which are pushing on towards the golden glory that brings them into vogue for Palm Sunday. The poplars, too, are heavy, almost as though with fruit, their velvety red catkins almost

54 THE ROLL OF THE SEASONS

ready to hang for a few days, and then fall in hundred-weights from the high branches. Best of them all, the abele catches the sunlight on its silver trunk as though on mirrors, and the thick fingers have woven a canopy overhead that glows in certain lights almost as warmly as the elms. To them the message of the wind is of more vital importance than to the other trees, most of which produce both stigmas and catkins, for these have all the stamens on one tree and all the stigmas on another. The nearest female abele is nearly a mile away, and if it does not get pollen from the ornament of our low meadow, the stigmas must go unfertilised or take dust from some eugenically inferior black or grey poplar. No one who lives in a poplar country can fail to note that there is some hybridism between these trees, and even the book-naturalists are doubtful as to how many species to write down.

The sad Lombardy poplar is a widower here, and, as far as we can find, throughout the British Isles. Never have we seen a female tree, or the woolly fruit, which falls freely in autumn from the other poplars, decorating the branches of this species. But our tall tree, descendant by sucker in the tenth or twelfth remove from the first tree brought from Persia or thereabouts, annually flings out its catkins, the pollen of which can never come home. We see no signs of its blood in the small aspens or poplars, black, white, or grey, that occasionally appear in the ditches. Still, if all its pollen is to be written down as wasted, so must 99·9 per cent. of the other organic dust that makes the spring air so aromatic, and gives unwonted colour to the sunsets.

PIN-EYES AND THRUM-EYES

THE descendants of Peter Bell have too well taken to heart the words in which the poet rebuked them for not appreciating the primrose. Instead of seeming a yellow primrose and nothing more, the modest but conspicuous blossom appeals to them as a quick means of gain. They dig it up and carry it into the nearest suburb, where the eager housewife buys it to plant in the garden as a reminder of the time when she ran the springy fields and loved the primroses on their mossy banks. The poor things seem strangely forlorn and wan, framed in the cold earth of the suburban back yard or front garden, frankly called by the architect forecourt. But the housewife is nothing if not imaginative, and she grows twenty years younger every time she snatches a moment to look at the blossoms that the plant prepared last summer to shine on a far different scene.

But the male being with no imagination, to whom the primrose is so little or so much that he can only appreciate it when it is set in its own brook-bank or hanger, anathematises the mercenary Peter Bell and the suburban purchaser of his slaves when he finds the primrose belt annually receding from the town, in which he is doomed, for his sins, to live.

56 THE ROLL OF THE SEASONS

Already the twenty-mile circle from Charing Cross is nearly starless, and it needs a two-hours' journey to take a skilled topographer to a wood or covert-side, where the primroses are at peace. Here the unimaginative male person rests and inhales the subtle perfume of a fine day, listens to the upward carol of the lark, watches the blustering humble-bee questing for a hole in which to build, and goes home, saying no more than that he has seen the primroses.

The teacher of "Nature Study," too, believes that he escapes Peter Bell rank for himself and his class when he takes the primrose to pieces and mentions its parts. He points out, what every child used to learn for himself, that some of the flowers have pistils, reaching to the throat of the corolla tube, while the stamens are found half-way down, and that others have the stamens at the top and a short stigma reaching only half-way up. And then he checks all further inquiry by explaining the object of this "dimorphism."

"When the bee begins by visiting a thrum-eyed blossom she collects a quantity of pollen on the hairs at the top of her proboscis. If she then visits a flower of the same type she does not fertilise its pistil, but only gathers a little more pollen. As soon, however, as she reaches a pin-eyed blossom she unconsciously deposits some of this store of pollen on the sensitive surface or pin of its pistil; while at the same time, some more pollen, half-way down the tube, clings to her proboscis, and is similarly rubbed off against the pistil of the next thrum-eyed blossom she chances to visit. The exact correspondence in position of the various parts in the two diverse forms

admirably insures their due impregnation. Thus each blossom is not only fertilised from another flower, but even from a flower of an alternative type, which is a peculiarly high modification of the ordinary method."

This beautiful theory, the statement of which we quote from one of Grant Allen's writings, has such an impress of likelihood that practically no one troubles to inquire whether, in fact, the primrose is a bee-flower at all. The curious child who goes and watches by a bank of primroses comes away at last, however great his patience, without having seen a bee visit one of the flowers. Or, shall we say that he sees one or two of these solitary bees that dash about here, there, and everywhere, come zigzagging across this floral milky way to pay a perfunctory visit to half a dozen blossoms? It is unkind of the bees in general to refuse to come and confirm the teacher's interesting lesson, and they have only one excuse for not doing it. There is only one of our social bees, the burly fertiliser of the red clover, that has a tongue long enough to reach the primrose's honey.

If the bees had taken to fertilising the primrose it is almost certain that the flower would not have remained yellow; for the bee prefers a blue flower when it can get it, and the primrose happens to be remarkably yielding as regards colour. The cowslip, very different as it is in form and colour, has no higher rank in most botany books than that of a variety of the primrose. The primrose, in order to blossom earlier, keeps the joint-stalk from which the flowers spring beneath the surface of the ground,

58 THE ROLL OF THE SEASONS

whereas the cowslip sends it up an inch or two, and even sometimes a foot, so that the flowers may make a display in the long grass of April. The wild primrose occasionally comes pink, and in some rich-soiled gardens "sports" all colours from pale pink to mauve and nearly black, and produces its flowers sometimes straight from the root and sometimes on flower-stalks.

Thus, anything might have been made of the primrose if only its tube had been shorter, or if bees would cultivate longer tongues. As matters stand to-day, any thinking naturalist would say that the primrose was a night flower. It does not, like the celandine or the daisy, furl its tender petals when night comes on, but, knowing no fatigue, keeps open the whole twenty-four hours. Because it is so conspicuous by day, we seldom realise that it is still more obviously coloured for effect by night. When the sun is down and sable night reigns, few objects more quickly attract attention than a bunch of primroses on their root. As though they had collected the sunshine and stored it in their pale tissues, they are so clearly seen that we imagine them to shine a little. Certainly if the moths, whose tongues are easily capable of reaching their sweets, want to find the primroses, they should find no difficulty. So the naturalists who spoke loosely of the bee and the primrose have been taught by the criticisms of the late Mr. Edward Bell, and a very few others, to bring in the moth instead to dust its proboscis with short-styled pollen and wipe it on long-styled stigmas, and vice versa. The case is not quite satisfactory yet, for some critics, like the indefatigable Mr. E. T.

Daubeney, sit up all night, and in the morning report that no moths have visited the primroses.

Can it be that those ignominious little beetles of the genus *Thrips* and others that Darwin took such pains to exclude from his experimental plants are entrusted with the important work of fertilising the primrose? Certainly no insect swarms on any flower as these little beetles do on the primrose. Each tube contains its two or three, and when they come wandering forth on the bunch, very fastidious people deem them a drawback to this otherwise best of spring flowers. But we have only to wait a few minutes, and the tiny creatures spread impossible little pin-points of wings and fly the equivalent of a thousand miles or so to the nearest alluring disc of pale yellow, with its certainty of pollen, either on the first floor or the mezzanine. During the day, at any rate, for one proboscis that enters the primrose tube, at least a thousand little beetles traffic in and out, winging from group to group of the blossoms with long-styled and short-styled pollen clinging to their bodies.

Thrips, of course, is far too busy and feather-brained a creature to worry about which particular parcel of pollen is to be delivered at which particular stigma, nor does his body serve as a measuring-rod, to be dusted in two rings by the long-styled and the short-styled flowers. But the stigmas are capable of attending to that, if only he will deliver plenty of pollen of each kind. The dust that is indistinguishable to the unaided eye is widely different under the microscope. There is a difference in size proportionate to that between a tennis-ball and a billiard-ball,

60 THE ROLL OF THE SEASONS

and the small pollen has no chance of penetrating the long style. Pin-eyed stigma must have thrum-eyed pollen, whether the reverse proposition holds or not. Moreover, if Mercury, whether his name be Thrips or Bombus or Selenia, brings the wrong kind of pollen, the flower will wait an hour or two for the proper kind. And, whatever may be the primrose's particular secret, it is certain that if it were not for the hawker and the suburban housewife, there would be plenty of wild primroses within the twenty-mile radius.

LITTLE BROWN BIRD

WE are scarcely at the average date of the chiff-chaff's appearance, yet the weather has been warmer than we usually have it "when the whitethroat builds and all the swallows." The sun shines with June brilliance out of a sky destitute of April clouds, yet the buds have not opened to supply the caterpillars on which our early summer visitors feed. Indeed, the sunshine is too ardent for real growing weather. Its glare imperils the leaf fresh from its bud almost as frost does, and the buds do well to remain unopened. April showers are even more needed than April sun to promote spring growth. That the birds have wisdom enough not to cross the sea in such circumstances shows how much the world is under one law. They await, perhaps, in their winter latitude the happening there of some event which happens only when our caterpillar life is on the move.

The field is velvety with new growth and starred with golden dandelions. From the clump of wych-elm in the middle comes the smart clatter with which the great-spotted woodpecker calls his mate *in esse* or *in posse*. We search the graceful grey tracery of the boughs against the blue sky, and find his shiny black shoulders, spotted with diamonds, with his

62 THE ROLL OF THE SEASONS

scarlet-crested head, vigorously vibrating as he delivers his little shower of eight or nine raps in one second. Then he pauses for a minute or so, and again gives the rattle that even the dull human ear can distinguish over half a mile away. It is a day-long performance that even becomes almost tiresome to those whose windows are within earshot. Yet there are naturalists who do not believe that the great-spotted woodpecker so calls his mate.

Beyond the field comes the wood which the summer chiff-chaff especially loves, and in which he usually reports his earliest arrival. It is decked with sallow blooms in honour of his coming. Each sallow can be seen nearly a mile off, as it seems to shine against the dark background of budless branches of oak and beech. It can be heard for thirty yards by reason of the bees that hum through the crowded catkins. It can be smelt for fully that distance to windward, thanks to the wealth of undoubted honey with which this sometime wind flower guerdons every winged insect.

Every bee and fly which the wood knows seems to have gathered to the feast of sallows. Tortoise-shell butterflies, out from their long hibernation, spread their bright wings wide open as they sip deliciously at the sweets. The drone-fly, excellently named from its resemblance to the male bee of the hive, as well as from its life of perfect indolence, begins here its long summer feasting. A rare and elegant hawk-fly hovers and sips, advancing or retiring unerringly by the eighth of an inch necessary to accommodate its tongue to the flower. And surely every bee that is awake is busy here gathering honey or packing her pollen-

bags. The yellow-headed humble-bee is absent, whence we mathematically infer that she still sleeps underground.

By night, as well as by day, the sallow spreads its feast. When the hum of bees has died away and the butterflies have long since gone to their mysterious bed chambers, the moths come, first single spies, but in something approaching battalions as the dusk deepens into a mild, overcast night, with only enough wind to carry the scent of the honey into remote corners of the wood. And while they feast, their luminous eyes expressing their joy, when their forms cannot be seen, silent and moth-like comes some knowing bat, and makes a stupendous meal of their sweet-stuffed bodies.

But where is the food of the chiff-chaff? Is there yet a caterpillar to be found in the whole wood? If a man had one small chiff-chaff in a cage (impossible thought!) and had to find food for it, using nothing but caterpillars he caught himself, where, with all his brains and skill, could he make out his toll? The only trees in anything like new leaf are an occasional wild gooseberry, a shrub practically unknown to the chiff-chaff, and the elder, which has no caterpillars. It is possible that the elder achieved this enviable position by its habit of early leafage, whereby its caterpillars also were early and were cleared off by the proverbially early bird.

Blundering human can find not a grub nor an egg on all the twigs. Here are a pair of marsh-tits, tame enough to be closely watched as they hunt. The field-glass brings one of them, as it were, within a yard. He is an elegant bird, with a light grey back,

64 THE ROLL OF THE SEASONS

and breast like a faintly silver-white cloud. His black cap comes just below the eye, and there is a little bib of black below his business-like beak of dark bluish-green. How his keen eyes scan every branch of a wild rose just breaking into tiny leaf! Now he is hanging upside-down and inspecting a twig from beneath; now peering along the side of a promising shoot; now hammering at something suspicious he has found in a fork. The tiny bunches of folded leaves have each a meaning to him, and now and then his keen bill snips off some egg of saw-fly, or other trifle, and swallows it with a pinch of salad. Possibly the mathematician would tell us that a moth's egg is to the tit as the tit's egg would be to a man. At any rate, our little friend has to work hard all day in order to get a living, and he beats much the same ground as many birds from over-sea will have to search when they come. What a going over each bush and tree must have before all these sharp bills have done with them! Yet a species of moth or fly is scarcely ever exterminated, and in a very few weeks there will be more aphides, caterpillars, grubs, and miscellaneous pests than all our feathered friends will know what to do with.

Chaffinches are singing their canary-like song; a hedge-sparrow twitters sweetly and plaintively from the top of a hazel; farther off, two rival wood-pigeons answer one another with placid defiance. Through this soft web of sound, actual or ideal ears catch something a little like the chime that a blacksmith rings on his anvil. We brush cautiously through a long tangle of wild guelder, spindle-wood, wayfarers'-tree, and dog-wood, crushing under foot starry anemone

and wood-violet, and as we pause half-way the sing-song is heard for certain. And at length there sits on the edge of a whitethorn bush, where the sun most warms it, our little brown bird. For the moment, without thought of food, he sits there the picture of a returned wanderer, and ever and anon a wave ruffles his throat feathers, and he rings out for the wood to hear those magic syllables, "Chiff-chaff, chifty-chaffy, chiff-chaff."

THE HOME-COMING

FOUR swallows—more than enough, as every one knows, to justify us in the belief that the sour weather of an unusually shrewish spring has had its day. It is in the valley of the Adur, about four miles from the sea, and the behaviour of our swallows is by no means that of high summer. Instead of skimming here and there with a swiftness greater than that of the cloud-shadows, they are steadily winging up the valley towards the north. We have to look twice to be sure that they are swallows, so plodding is their flight. The rosy breast of the leader wavers as it approaches, making manifest how tired the little troop is. They are probably going fifteen miles an hour for all that. We catch a glimpse of their long forked tails as they pass, then watch them just clear a big barn that crosses their route, and vanish into the darkening north.

The next morning we wake up in an up-country farmhouse, to see swallows sitting on the dead bough of the laburnum just below the window. By coincidence they are just four, and we may be pardoned for imagining that these are the birds that went up the Adur yesterday afternoon. They sit at ease, or rather completely relaxed, in the home garden they

have won by days of flight. The sun strikes them as they sit there, beaks settled into chests, bodies sunk close to the bough, a quiet gurgle of throat-music speaking of a content that conquers tiredness. The birds are absolutely tame, and we can admire now, as we cannot when the summer activity is on them, the delicious scheme of their colouring—the bronze-gold of their throats, the whiteness of their breasts, the purple blackness of the long cloak that covers the back. The uniform seems to glow as freshly as when it left Africa.

The musical laugh of the wryneck ripples from the orchard. A single tree in a notch of the downs by the sea caught five of them one Sunday morning lately. We shall not see five grown wrynecks in one tree again till another year has gone by, but there will be as many young ones in a hole in the apple tree, whence our returned "cuckoo's mate" will ruthlessly drag out the nest of a blue tit to make room for them.

On another morning the Mediterranean wind has brought a shower of gold. A score of yellow wag-tails are running about among the cattle in the home close, snipping up the first British insects they have tasted for many long months. There is a flash of feathered lightning among the pear blossoms of the walled garden, to tell us that the gorgeous redstart is again at work at his fly-catching. How glorious to view again his tropical colouring—his black casque with snow-white crest, the slate-blue of his back shading into pure grey at the sides, his flaming tail constantly in motion!

In the dry ground, a rabbit seems to have flashed

68 THE ROLL OF THE SEASONS

its flag as it popped into a hole ; but it is the wheatear bobbing on its slim black legs, as though in ecstasy at grasping again its native turf. He takes a little run like a livelier thrush, and stands on a mole-hill, where we can take a good look at his grey body, tinged with rose at the throat, and slashed jet-black behind the eye and along the closed wings. You might have thought that he would be less conspicuous against the dry grass or the stony bank if he were dressed entirely in grey. But the fact is that the black touches with which snow-birds and desert-birds are painted help them to sink into their surroundings. They represent the hollows that are certain to occur in the smoothest snow-field or desert. An entirely grey patch, as large as a wheatear, would soon draw attention in a field of dappled grey, whereas when we take the eyes off our bird we have difficulty in finding him again until he moves.

The hand of the south wind has flung us back our birds, scattering them justly into every nook that knew them last summer. Wheatears are wafted across intervening lowlands to the uplands they belong to ; landrails are blown over mountain-passes to the fat valleys they love ; scarcely a nightingale flutters beyond the line of the Severn ; a large area in the southern home counties is without redstarts ; pied fly-catchers go only to the Cumberland Lakes ; and many other partialities are observed. These are facts to make us believe that not only does the English-bred bird come home to England, but that in practically every case each individual regains the very copse where he was hatched, or where she built last year. Where an old bird has died in the interim, one of its

family takes the old nesting-site ; where the parents survive, the young ones nest as near to the family seat as may be.

The summer range of these far-travelled little birds is remarkably small. We frequently find that a single tree forms the whole summer world. Thus in the middle of a long mountain-pass a single adventurous rowan has established itself, and all day long on any summer day its own pair of willow-wrens can be seen flicking in and out its graceful foliage in their eternal quest for insects to feed the little family in the heather below. A mile farther on, another rowan has also its own pair of this or some other species. Each hedge that was the shambles of a butcher-bird last year will have its red-backed tyrant again ; from each tree-top that had its tree-pipit the bird will spring into the air and float back on wide wings, singing its falling song.

It is a trite saying that the problem of how birds return is still unsolved. We cannot even agree that there is a seasonal wind that aids them in the first requisite of a roughly cardinal direction. The most nearly favourably wind, blindly followed, would be apt to take our blackcaps to the middle of the Atlantic, instead of among the groves of Ireland, or to leave the whole of England unsupplied with nightingales. With the utmost willingness of Æolus to help, a sense of direction is required. There is probably an inherited knowledge of the main route to guide the flock, especially in autumn, when the journey is away from home, and the faculty of always knowing the direction of home to aid the individual.

Man with his compasses, his logarithms, his observa-

tion of the stars and other signs, his deductive reason, and his mechanical reference to the stored-up wisdom of a thousand generations has scarcely a glimmering of the faculty we call instinct in lower creatures, or intuition in our talk of future human acquirements. Knowing nothing of the homing faculty, we are eager to deny its existence, in spite of almost overwhelming evidence. We grant the carrier-pigeon enormous powers of eyesight in order to deny it a psychological excellence that we do not possess. Our summer migrants confound even this far-fetched explanation by sometimes crossing five hundred miles of sea, and by usually choosing the night for their migrations.

It is the old story of the single accomplishment proving better than a whole bag of tricks. The skilled navigator in possession of all the resources of science goes miles out of his way in order to cast his ship on the rocks, while the tiny gold-crested wren crosses seas and continents straight to the tree where its nest was slung twelve months ago. The feat is a triumph of the single aim. The whole being of the bird is concentrated on this purpose, which reason would tell it at once was impossible. It is suddenly endowed with a faith that removes mountains, and makes seas as though they were not.

Any one who knew the physical constitution of the bird and no more would say that for nine out of ten of them an uninterrupted journey of a hundred miles was impossible. The feat of migration is so stupendous that we try to believe that the rarity of the air in the higher regions gives the birds an advantage; some daring spirits go so far as to say that they do but go aloft and wait till the world has brought the

end of the journey beneath them. These have left out of account the known force (in higher natures) of the obsession of an idea. The "hypnotised" person is capable of exertion a hundred and a thousand times beyond the ordinary strength of his muscle. The bird on migration is in the hands of a cosmic power, of which we have the dimmest perception. Home! home! home! is the thought that gives it superavine intelligence and superavine energy at this time of the year. It is not so easy to give a convincing name to the thought that drives it south in autumn.

THE TRIUMPHANT BLUEBELL

THE rich haze of the bluebell blossom once more covers the floor of the wood. It stands like azure smoke, level at span-height, among the grey beech-stems; kindles to a gem-like lustre among the red bracken of yesteryear; breaks as though in foam where a sheaf of white stitch-wort leans against a holly. In far vistas of the wood the bluebell mass attains the consistency of water, a sea of blue and purple brilliancy such as our climate very rarely affords.

The eye refuses to see the individual bluebells. When it is at last compelled to concentrate on the spike, it fails to find the stalk that supports it. The curly head of the flower seems suspended on wings. We almost expect to see it go tumbling up skyward like the speckled wood-butterflies, rising here and there in pairs, that gyrate so rapidly as to cheat the eye into the belief that there are four instead of two. But the bluebells await their bees in their countless ranks, merely nodding as though in amused tolerance of their too rough impatience for the honey.

Apology is certain to be expected by those punctilious in such matters for calling our cherished

wild hyacinth by the name of bluebell. We shall give none. Our own bluebell is as dear to us as the harebell or hairbell to Scotland. We have not sung it so sweetly in verse, or dipped it in political tradition, merely because that is not our way. But we cannot consent to find another name for the light of our woodlands, still less to transfer it to the hairbell that swings so sparingly on our downs, by comparison with the luxuriance that has earned it the attention of Scottish poets.

Nor would the name "wild hyacinth" be tolerated by certain would-be precisians of another school. Not a few botanists have violated anatomy by placing our bluebell among the squills. *Scilla nutans* they call it, the squill that nods, preferring to put it in a genus where it becomes an exception, rather than let it remain in one where, to the ordinary observer at any rate, it is well at home. The crowd follows the lead with the crowd's usual eagerness. The other day we had the pleasure of reading in a daily paper that "the bluebell is a little like the garden hyacinth, but," etc. So much the worse for the garden hyacinth. The difference between them is almost entirely due to the overfeeding and tasteless selection of the civilised species.

Out upon *Scilla* as a generic term for our bluebell. *Hyacinthus non-scriptus* is as suitable, and far prettier. It recalls, too, in a happy way, the fable that has been overwhelmed by the uncouth proportions of the potted flower. When Hyacinth, beloved by Apollo and Zephyr, was slain by the jealousy of the latter, his blood not only became a flower of the same colour (something between the yellow and the deep Oxford

74 THE ROLL OF THE SEASONS

blue to be seen any day in our parks), but bearing on its petal the unhappy boy's name. As the "Lusiad" has it :

"The hyacinth bewrays the doleful 'Ai,'
And culls the tribute of Apollo's sigh.
Still on its bloom the mournful flower retains
The lovely blue that dyed the stripling's veins."

The name of the godfather, or even his "Ai" that greeted the death of the youth, is hard to find on the petals of our cultivated hyacinth. Let our wild species then beat it in frankness by proclaiming that this part of the story is unsupported fancy.

The note of the bluebell is triumphant abundance. It is one of the flowers that children have been picking eagerly for a thousand springs, yet it survives in apparently unabated luxuriance. Long after the near approach of a town has exterminated many another flower equally coveted, the wild hyacinth spreads its rosettes and sends up its blossoms in their accustomed places. They come up among the rubbish with which the builder strews the back yard, and blossom, if we let them, more sturdily, but with a slight paleness, at the edges of our garden paths. Nothing but the removal of the trees daunts them. By unseen means they leap from one wood to another, and "bring the heavens down to earth" there also. They sidle along the hedges so as to vein the whole earth with the fabled colour of a prince's blood. Now and then, on the north or the east side of a wood, they fling their armies into the mowing - grass, towering above dandelions, and throwing cowslips and buttercups into the shade.

The bluebell achieves its triumphs by none of the means most "recommended," we might say, by the botanists. So far from having stings, spikes, or a hard stem to resist attack, its flower-stalk is obligingly severed, so that at the slightest pull it comes up from the root, with a long white butt. It suffers itself to be gathered in sheaves that the child's arms can scarcely enfold, and still its battalions confess no diminution. The lane from the wood is strewn with discarded flowers, or the white stems cut off from the bunches of bloom. Every cottage window has a big basin full of blue loveliness. Yet the wood still holds a sea as much more multitudinous as it is more transcendently beautiful.

Equally the bluebell discards the principles of extreme insurance of cross-fertilisation, of specialised means of seed-disposal, and of great multitude of seeds. Here and there the sea of laughing bluebells is about to be splashed with the bright crimson of a purple orchid. The "long purple" has the orchid's usual elaborate machinery of fertilisation, which the children delight to make fun of by pushing straws along the insect's path and extracting the pollinia. A single spike of bloom results in an almost fabulous number of seeds—outnumbering that of several thousand bluebells. But the orchid's seeds are mostly barren, in spite of its anxiety in the matter of fertilisation. The remainder are lamentably small, grains of dust obviously incapable of successful struggle under conditions of free competition, so that "long purples" soon become extinct where children abound.

The bluebell, with its two or three hundred large,

76 THE ROLL OF THE SEASONS

black, shiny seeds, proclaiming its distant affinity to the onion, is excellently equipped for a struggle wherein strength counts for more than cunning. The wind of autumn probably scatters the seed a few feet from stiff seed-cases of the parent plant, so that the migrating power of the species amounts to less than a yard a year. Nevertheless, it has managed to overrun a very large portion of the earth, being known throughout temperate Europe and Asia. Much of its travelling was obviously done in pre-historic times, when there were no British Isles, very little Atlantic, and when woodlands were far more general than they are now.

Not even the whole woodland does the bluebell overrun. In some of the drier portions another lily, the sweet-smelling lily of the valley, is sending up myriads of leaves rolled into points, within which the little peals of ivory bells are in process of being made. Solomon's-seal, also claiming near relationship, towers its larger growth in these drier tracts. The damper flats down by the stream, too, are unoccupied by the hyacinth. They are reserved for a third member of the order, which has a peculiar triumph of its own. It is to send up an umbel of such pretty stars of white blossoms that one or two of them must always be picked, in spite of the fact that they and the whole plant smell strongly of garlic.

A lily with the smell of an onion! There are other lily wonders to be found in the wood. Here is one that has grown to timber, whose apparent leaves are fiercely spiked at the tip, and bear blossoms and afterwards berries in the middle of the blade. But the botanist says that the butcher's-broom has no

THE TRIUMPHANT BLUEBELL 77

leaves, and that these flat things fulfilling the function of leaves are its branches. The grape-hyacinth, May-lily, tulip, and fritillary would easily be recognised as belonging to the order, from each one's affinity to one or other of the species already named. Less easily will it be recognised that when we eat asparagus we indulge in the æsthetic pleasure of feeding upon a lily. "You have but fed on the roses and lain in the lilies of life." Roses are substantial food when they take the shape of apples, pears, and plums; lilies sad bedding if of the type of butcher's-broom. Nor need we make our couch in their midst to enjoy the bluebells with which "Spring paves the woods afresh with matchless blue."

THE RUSH FOR THE SUN

THE cynic may deny the existence of the sun, or, at any rate, that it has been lately in evidence. It does not follow, however, that because the human observer cannot find one spot in the clouds more illumined than another, or a darker shadow of himself on one side than on any other, there are not X-rays and Y-rays and Z-rays of very real import darting here and there throughout the animal and vegetable kingdom. If we will lower the umbrella and condescend to look at the trees or the annual flowers of the earth, we shall be struck by the fact that this gloomy season of wet, varied with false promises of what we call fine, is very good growing weather. The horse-chestnut has lifted its drooping fans and spread them out, so that already there is more leaf than sky to be seen as we look up. The tiny leaves of the elm daily, almost hourly, look less babyish, and beneath them the thick fool's-parsley comes to the knees. It is springing up with a verve that looks like an ambition to overtop the elms. But that cannot be done in one year, even by the fool's-parsley, and the glance of a perfect stranger would be enough to show that it is but an annual. With hollow stalks for strength and lightness, of brittle material for cheapness and speed of construction, strengthened with angular ribs of tougher fibre

for safety, the umbel-bearing plants of which this is the commonest representative press up very efficiently for their brief annual revel in the sun. The multiplicity of their species, one of the chief bewilderingments of the young botanist, shows how well the system has paid for millions and millions of generations.

Everything, from the lordliest tree to the humblest creeping plant (during its little period of flowering), presses heavenward—that is, straight for the zenith. This though the sun is scarcely ever in that quarter of the sky, and only for an hour or two in the whole middle month of the year. The household plant usually, though not always, strives to get out of the nearest window. We can understand that as a groping after light which is the essential stimulant of its green laboratory, but the attitude of the tree in the plain seems more like a spiritual aspiration—a desire to get, by the most direct way, out of this wicked world and into a better. It is not so, however. The grass and the fool's-parsley and the trees are tiptoeing to look over one another's heads at the sun as he wanders round the horizon ; fighting against the overshadowing of a neighbour that would cut off any ray, however early or however late ; striving for the dominance that will enable the winner to spread his branches right over the sky-space of the loser, kill him, and get his root-area as well. Some are more cruel and selfish (in their probably blind way) than others ; some less eager for battle, and with a more gentle or cunning way of getting their own. The snowdrop and the crocus avoid fuss and bitterness by coming very early. There is very little fighting for the sun of January and February, which, for the sake of peace, they consider

80 THE ROLL OF THE SEASONS

good enough for them. Long ago they finished their summer, and the annual armageddon will rage above their tomb. Observe, on the other hand, the tactics of the daisy—one of the flowers most beloved by the poets. Disdaining the challenge of the grass to a fair and friendly race, it spends the bulk of its days in a spreading movement, a stifling of rival growth in babyhood under a rosette of flat, earth-clinging leaves, from which its “wee, crimson-tippit” flowers rise to a leisurely enjoyment of a solitude that serves it for peace.

More roundabout, in several senses of the word, is the method by which the hop and many other climbing plants secure heaven. The climbing of a stick may seem an easy matter, when the stick has been obligingly put just in the right place by the self-interested farmer. The intelligence, or whatever it be, of the hop is better seen when there is no stick to remind it by a touch that heaven can be won by a spiral as well as by a straight line. You can then see the shoot of the plant set about finding the core of its spiral, if there be one, by methods similar to the finding of its way home by a carrier-pigeon, the hunting of a hound for a lost trail, or the search of a man round a central spot for an object he thinks he has left thereabout. After rising just above the ground, the hop shoot bends at right angles, and then the horizontal portion sweeps a slow circle through all the points of the compass, growing as it revolves. The second circle has necessarily a longer radius than the first, and each of the others covers more ground than the last. At the height of its speed the circle is accomplished in a little over two hours, and at about the thirty-sixth

revolution Darwin found that another plant of similar habits swept a circle sixteen feet in circumference at a speed, for the tip of the shoot, of thirty-three inches an hour. Such energy and such singleness of method is sure to be rewarded. A straight clamber towards the light might miss many uprights by a mere inch, so might semicircular oscillations towards the south. But our hop secures vertical advantage by systematic horizontal gropings, gains the light by exploring the dark, goes north in order to come south.

A bramble-bush in the first hill-field was woven all over last summer with the graceful leaves and prettily coloured fruit of the mandrake. All that tapestry has long since disappeared, and now the bush is greening with its legitimate blackberry buds. But through the heart of it is rushing up again a sheaf of bryony shoots, racing neck and neck, each with its tendrils ready for a cast round any support that may be worth lassoing. Already there are tendrils that have caught something, and others that have outlived their capacity and caught nothing. Both have coiled themselves into spirals, the unsuccessful ones into long corkscrew ringlets, with coils all running one way, the others with a turn or two to the right, then a turn or two to the left. The support is thus drawn tight up to the plant, but not too tight. The bryony is anchored to the bush with spring cables that give and fetch when the wind shakes its world, and thus it rides out the fiercest gale. Again the bush and the pollard-ash above it will be festooned with that exquisite pattern of vine-like leaves and round berries in green and lemon and crimson.

The bitter-sweet, also rushing up to the sun as a harmless parasite, is a sheer extemporiser by compari-

82 THE ROLL OF THE SEASONS

son with the bryony, yet it manages to ramble through the tallest hedge and take the best of the sun for the ripening of its egg-shaped fruit. When needs must, it will grow into a tolerable bush, but it very much prefers to lean and scramble on others. The hop can only wind from left to right, the bean only from right to left, but this arab of the bush is Jack of both twists though master of neither. It is without tendrils or leaves that can hold on, yet few flowers are more common than its poisonous-looking, potato-like blossoms. Higher in the scale of extempore climbers is the traveller's-joy, now sprouting from its high woody tangles for fresh excursions through our English jungles. Either leaf of any of its pairs can curl its stalk round a twig. The thrill of the touch is communicated throughout the fathoms of wiry, dead-looking stem, and the community generously supplies the self-appointed grabber for empire with extra nourishment. The leaf-stalk swells and toughens as it strains to its new task, and is granted as its guerdon the immortality that belongs to a branch, for when in autumn the other leaves fall off, our friend who has grasped something remains at his post. The dependent life, after all, is a strenuous life. Of all woody plants the honeysuckle is the first in leaf. The battle among the groundlings is now almost at its height, while the lordly self-supporting trees that fought their war long ago as saplings or seedlings among the lilliputian grass open the leaves of their maturity very much at their leisure. Theirs is only the civil strife of leaf against leaf, and as the spoils in any case belong to the community, it is comparatively indifferent as to the period that the war shall cover.

APPOINTMENTS

IT is a narrow, winding street, with house-cliffs three times as tall as the way is wide, and an average of four people abreast jostling on a two-yard pavement. There are three or four up-river towns that can fill the specification, and we need not say which one is this. There is blue sky overhead, and as we turn a corner we come suddenly on a basket of mimosa and daffodils standing in the sun. Still later, the odour of them reaches us—a hot, enlivening scent of pollen and honey, both of them manifestations of sunshine. Dingy houses all round, rent, as it were, with this glory of pale gold emitting the very glory and comfort of paradise. And, hanging before the golden blooms, two eager bees, free merchants in this world of marketing, hesitating in so rich a world as to which cup to enter and pillage. The blooms are from Scilly, and the bees from some garden up there and down there beyond the houses that seem to end the world.

These bees, one of which, to the astonishment of the flower-vender, we catch, inspect, and release, represent one of the wheels of spring. At the right time, neither a day too soon nor a day too late, they awake, or are born (for they come from the chrysalis),

84 THE ROLL OF THE SEASONS

in their underground and lately frozen quarters. And they always find that, obeying the more direct, open-air message of the sun, the first flowers of the white arabis, their especial flower, are open. (Mimosa and daffodils from Scilly are a luxury unwarranted by former experience, and the Fates grant that they prove not a delusion and a snare.) These are the males of the handsomest of our solitary bees. Their time is a day or two ahead of the females growing in the same burrow as they, but needing to grow longer before they reach the greater perfection of wifehood. For the males, the flowers provide just snacks of food, sandwiches for mere gadders-about and foragers for self. But we see even now the anthers swelling and ripening, so that a second and greater wheel shall be ready at exactly the right time to fit the pollen-collecting and family-providing female. Then will emerge a third bee, a cuckoo that can only rear progeny in the nest of these other provident mothers, and the wheel that fits this second species is the red dead-nettle, which infallibly blooms in time for its nourishment.

Everywhere the inquirer will notice an astonishingly exact timing of apparently distinct phenomena. Our insectivorous summer birds come sometimes early, sometimes late, but whenever they come they find the leaves just so sprouting that the caterpillars are just so ready to eat them and be eaten by their guardians. They all follow the message of the sun, and the birds somehow make allowance for the fact that in the clear air of the Mediterranean he is usually faster (in addition to the difference of latitude) than in our misty and uncertain climate. But that is by no

means all. The mathematician would tell us that a frost going twelve inches deep in sand and only ten inches deep in loam, minus an inch or two owing to the shelter of the arabis leaves, would throw the arabis wheel and the anthophora wheel right out of gear ; that other seasons would so much favour the bee and retard the flower that the former would 'emerge and starve before the other opened. Any one who had seen our indoor daffodils a month ago would have said that the doubles (planted three weeks earlier) would blossom long before the singles, and that of the singles there were three buds that would open long before the others. But the singles overhauled the doubles and waited for them. Both bowls opened a blossom on the same day, and all the single blooms were open within two days of one another.

However early or however late the first month of spring, the year usually keeps time with its own average from the middle of April onward. There is a month's difference between the earliest and latest recorded first appearance of the chiff-chaff and wheat-ear, while the nightingale and swallow are rarely a week out one way or the other, and the cuckoo, ring-dove, nightjar, and landrail come every year on practically the same day. Last year the "tiny leaf" on the elm-tree bole could be found anywhere in the south on the 1st of April, but this year the trees seemed till two days ago hopelessly out of date. It is better so. Nothing is more encouraging than the splendid rush that Nature makes at the beginning of April, when she has been well held in leash through March. From one day to another we see marked

86 THE ROLL OF THE SEASONS

changes everywhere. The shoots of the balsam-poplar exude varnish plentifully, then thrust out their tightly rolled and fragrant leaves. The green points on the lilac trees grow, as it were, from mere colour into luminosity, and fatten almost while we watch them. The dead-looking, lichen-covered twigs of the apple, that looked as though they could never blossom or even leaf again, suffer an astonishing change within a few score hours, and every tree, according to its kind, puts forth its summer karma.

Every manifestation of the power of the sun, however diverse-seeming, is intimately related to some other, and therefore to them all. As soon as the anthers are ripe and shaking out their pollen, the stigmas on some other tree are ready to receive it. If an insect is necessary to effect the introduction, at the right moment bees, moths, flies, or tiny beetles rise from the grave with a craving for honey which they proceed to satisfy without knowing what is the true end served. One cue calls them all, and they rush on the stage from opposite wings, not guessing that the author intends to turn their seriousness into fun or their fun into tragedy.

Note the appointments that are kept every year with one tree; for example, the oak—blows of fate from which there is no escape. When the catkins are hanging, comes a fly from the débris of last year's foliage on the ground, whose bite, delivered in just this one week of the year's cycle, produces or makes the protoplasm of the tree produce the currant-gall. When the leaves open another fly keeps rendezvous, and with early incision guarantees that by the 29th of May there shall be huge, spongy, rosy "oak-apples."

These and a score other gall-flies keep appointment with the oak alone, and of all the other creatures to which the oak is a kingdom we need only mention the oak-weevil. It is now asleep—in a sense unborn—and certainly without any intention of the part it is to play. When the leaves are tender and pliable, whether that be earlier or later than usual, the weevil will be there with its cutting instruments and its foreknowledge of the best way yet discovered of cutting to the mid-rib, folding and rolling the leaf so that a complete hanging shelter for its progeny shall be formed. The cleverest man that, not having seen one of these shelters, shall attempt to design one will find that the weevil has improved on it. But here are wheels quite beyond our comprehension.

And is a simple fact like the migration of the redstart within our comprehension? The nearest conception we can get of the impulse that moves the migrants at the right time is a kind of Hertzian-wave apparatus born in each of them, and capable of responding to the same thermo-electric stimulus that has moved its ancestors for untold generations. How subtle and extra-material this impulse must be is shown by the way in which it penetrates artificiality. The Canadian goose moved to another hemisphere, fed comfortably in a public park, even reared from the egg in this country, yet raises its clipped wings and makes ineffectual attempt to fly north what time the descendants of its ancestors in North America are hastening to their banquet of snails and crustaceans in the pools of British Columbia. Or consider the still stranger case of a fish that now looks like a brown trout, which has been living for some years in

88 THE ROLL OF THE SEASONS

a tank at the Zoo. It is really a salmon, hatched in a Thames hatchery for the restocking of that river, now salmonless. About May or June each year this fish grows silvery—an undoubted salmon. It rushes to the top of the water, and leaps in an evident desire to leave the sea and ascend the river. Yet it is not in the sea, but in a tank of fresh water. And where is it that each human being desires to go? What longing is it that stirs him each year when the spring madness is upon him? Perhaps he feels that he is not playing precisely the right part in the universal scheme. Perhaps he only then realises the oneness of the world in which he lives.

POCKETS OF SPRING

IT is weeks since we renewed our youth by picking the largest cowslips that grew on the ridges of our fat southern fields. Yet we have to travel a very little northwards to see the pleasant "paigles" still spangling the meadows with their unmistakable pale green. Just beyond the Humber we are still rejoicing in long purples, milkmaids, and other jewels of the field that we had thought to have seen the last of. Marsh-marigolds still exhibit their fat beauty; stitchwort is scattered over acres, like rice at Spring's great wedding; the gorse bushes are one unbroken blaze of gold.

The moorland has caught the strength of the sun, and responded at length as amorously as the commons of Surrey. On the greatest heights the cloud-berry has opened its great blossoms, that remind us at once of the anemone and the blackberry; a little lower the bearberry exhibits clusters of pink-and-white bells at the tips of its box-like foliage; the whinberry has pink blossoms like globes of fruit, each filled with a tiny drop of honey of exquisite sweetness; the bottle-like fruit is also there, though in green instead of the bloomed black that will refresh the traveller next month. The whinberry

90 THE ROLL OF THE SEASONS

gives patches of bright green in a waste of sullen heather, for the time of the heather's glory is not yet. Tiny green fingers of fern and tormentil creep round the base of the few grey blocks of gritstone which the sea long ago carved and left on the summit of our moor, now a thousand feet removed from the eroding waves.

After the sea went down the hillside, the mists of heaven took up the work of carving and beautifying the hills. The rains found out the softer streaks, however winding they might be, and made runnels that neither sea-pink nor cistus nor heather nor whortleberry could protect. It sank gorges that widened into mile-wide valleys; formed island hills far out in the plain that now stretches twenty miles to the sea; gashed a tidal river-bed five hundred feet deep; set modern piddocks to drill holes in the fossil ammonites of ten million years ago. After the deeper slashes of time's chisel the eye rests on the more delicate work that graces the round edges of the moor. The little runnel creeps hidden under the heather stalks, then plunges down a fern-smothered trench, then loses itself for awhile in deep green moss, then, boring a deeper and wider V, brings up all manner of bushes and trees, whose vivid green rejoices in the summer that has been opened for them in the flanks of the winter-teased mountain.

The rain carves its channels where it will or where it can. Perhaps the sea-urchins' cemetery proves more soluble, or the slabs that prehistoric piddocks fretted most, or the crack that a wanton sea filled long ago with pebbles or more movable silt. At any rate, the rain may not stay on the hill-top where the

clouds have delivered it. North or south or east or west, it must flow away, and where it began to flow yesterday it will flow again to-day. So our streaks of tree-decked gullies wind and straighten in all directions. In one the golden oaks are mingled with soft green rowans and silver-birch, a lady among trees, though not so feathery as when she queens the lowlands. The thicket is snowed with hawthorn, silvered with sallow cotton, reddened with cornel, ink-spotted with Scotch pine. Another gulley, pointing more westerly, is all bursting with the grey-green of ash, another sparkles with sycamore, another that has reached a lower level with greater speed has alder all along the stream and flowery meadows beyond.

A goat-path threading the wall of a precipice leads us down to a wooded tableland beneath our frowning moor. We could toss a biscuit into the tops of the feathery larches three hundred feet below, and they swim up to meet us as we pass down the steep gradient of our mountain-stairs. It is on the cool side of the mountain, the compass tells us so, though the sun is beating on it fiercely enough at this hour of the day. That which seemed a flat tableland is carved by incipient becks still more extravagantly than the longer slopes, and we find ourselves clambering amidst a perfect perplexity of green banks, bouldered fissures, thickets, and open spaces. In one pocket of this small Switzerland the hawthorn is in full blossom, with a spray of lingering blackthorn to keep it company, another has bluebells and red campion in rich profusion, and a third is on this day of mid-June a perfect picture of rather early April. The larches, green after blossoming, stand round in

92 THE ROLL OF THE SEASONS

a crescent that almost touches the grim and trickling walls that compass the rest of the dell ; moss and tussocks corrugate its slope like an arrested avalanche, and all among their bubbles the primroses come starting forth in pale bunches. It is just so that we saw them two months ago in a Surrey coppice. The same black bee that flew then is here now ; the willow-wren that sang its descending scale for the first time then is silently hunting here to-day ; the cuckoo calls to us as though with the opening announcement of his arrival.

Spring lingered delightfully in the south, but once she sets forth on her northward journey she flies with summer hard on her heels. Summer even lies in wait for her, and at her coming breaks out with an accompaniment that drowns the song. Down by the waterfall, whose beauty can charm us by the hour together, the lesser celandine is starring the green rocks. But close to the falling stream the dipper has its nest, woven right in the track of the winter water, and in peril of a sudden freshet. And the dipper is feeding young just above the flower whose coming in most counties precedes even the mating of the robin. On the moor the young grouse are creeping through the heather-stems like shrew-mice, and lying to be trodden underfoot rather than reveal their presence. In the lane we see a dozen little dots threading along under an overhanging fringe of grass. When we stand by them they stop each in some cranny or tuft, and most of them become invisible. But two of them we pick up and admire for a moment as they sit with apparent confidence in the hand. They are young pheasants, so small that we could

almost squeeze them back into their egg-shells without harming them. Farther on, the plovers come wheeling and screaming round us, and by their mistaken anxiety make us see their tiny offspring cowering close beside the road. Where straggling pines dot a wild piece of heather, whose tufts of cotton-grass proclaim its bogs to have been undrained, curlew fly and shriek at unwonted intrusion on their solitudes.

Only in the water does spring seem to have gone forward without regard to latitude. The trout spawned here even earlier than in Hampshire, and if we leave the lordlier domain of the beck and look into the poor, scum-laden pond, we shall see that the tadpoles are of the same magnificent dimensions they have attained to in the south. In fact they seem larger, as though they might be tadpoles that were too late last year to become frogs, and had gone over the winter into a second year. It has been so, and there are even creatures that have given up the perfect state altogether, and live, reproduce, and die as tadpoles where once they blossomed into beings apparently as superior as the butterfly is to the caterpillar. But we are assured that these tadpoles of the sub-moorland pond are the produce of this spring's eggs. Their parents slept in the pond itself, and were called betimes. The newts, on the other hand, hibernate on dry land, and came into this northern pond after we had bursting eggs in lowland counties. Some of them may have slept in the grotto of primroses, whose inhabitants escape the cold snaps of April and May, and begin the year amid the smiles of June.

IN A SUSSEX HANGER

LET us at any rate call it a hanger till some learned person who has made hangers a speciality puts us to rights. We have more than a suspicion that this term is too generally used. Gilbert White's hanger ran to the top of a hill, whereas ours is mostly in the hollow, and its highest bank can scarcely be called a hill. Gilbert White's eminence was covered altogether with beech, "the most lovely of all forest trees, whether we consider its smooth rind or bark, its glossy foliage, or graceful, pendulous boughs." But we have never heard the name given colloquially in Surrey or Sussex to a wood of timber trees.

First your rough ground given over to Sylvia bristles with young scrub. The brambles begin to be subdued with shoots of oak, ash, sycamore, and all manner of self-sown trees. The rods attain ten or twelve feet in length, and the beater-up of pheasants forces his way through them with difficulty. The place becomes a hanger. Then your best suited trees smother out the others, the trunks swell and lengthen, but the space for walking becomes more liberal. We have a carpet of dead leaves and lofty architraves carrying bright green. For a hundred years or so it is to be a forest. Then we cut down the trees, and everywhere between

them, like magic, for they seem to come from nowhere, up spring the primroses, the anemones, the bluebells. The wild strawberries come there, redder, larger, and more luscious than anywhere else. The blackberries of a hundred years ago are reincarnated as blueberries, early, large-lobed, with a rich bloom, generous as garden fruit. Then from the sawn stumps of the timber trees, shoot up long, clean rods, that stand in crowded fascicles and spread over the interspaces like the sheaves of wheat growing from plants the hoe's-width apart. The nightingale comes back after an absence of fifty generations; the wood becomes once more a hanger, and still more a hanger than it was before the timber grew.

Our Sussex hanger is in the maturest stage, or shall we say in all the stages at once? The oaks that were too staggy to be worth cutting down are still here. The stools near them have not sprouted, for the tyranny of overhanging leaves in June forbids. But the primroses, anemones, and bluebells can amply develop their beauty before the oak-leaves come. We push through the stiff rods of the stool-growth with difficulty. They spread out against us, lock fingers against us, thrash at us, force us aside, so that we are continually walking round half-circles when we aim at diameters. But clearer sky is ahead, and we fight on, to come out with a gasp of wonder into one of these oak-sheltered spaces starred to the brim with white and butter-coloured flowers. The flick of the last envious stool-rod has vanished, and ours is the most perfect Sabbath peace—in our garden of Eden open to the full warmth of sunshine, the full ecstasy of blue sky, sheltered from whatever wind may be blowing.

96 THE ROLL OF THE SEASONS

A big bumble-bee drones somewhat disconsolately through our flowery kingdom, for it does not appeal to her as a substitute for the sallow blooms that have now fallen. As we lie prone against the trunk we can watch the chiff-chaff at his eternal search of the twigs overhead. No, not eternal, for he stops to utter his knife-sharpening song that fits spring sunshine as no other song does. Two swallows, ample assurance that summer is here, circle high up in the blue; the swinging call of the cuckoo announces that industrious bell-man to be quite near; thrush and mavis are, as it were, silenced by the low rattle of the nightingale from such a thicket as the one through which we have just passed. We must face that jungle again for the sake of one glimpse of the shy red bird.

There is a difference that seems almost specific between the close-noded twigs of the grown oak and the long-jointed, smooth, clear-skinned shoots from the old roots that have lost their trunks. The difference will be as marked when the great leaves come on the latter, and it runs even to the galls, which are, nevertheless, caused by the same flies that have operated for a hundred generations on the older trees. Here stood a cherry tree two good feet in diameter. Forty vigorous shoots are striving for the succession. Each has opened its red young leaves as early as the other, as though eager to get an all-important week's start in this summer's race. An older tree standing near can afford greater deliberation, and gives us, like a delicious blow in the eye, sprays of white blossom that obliterate every twig.

Some instinct or some stroke of luck makes us very silent in a certain clearing with a streak of heather

that proclaims a sanded floor, a mat of dead bracken near by, and little tangles of honeysuckle here and there under the branches that they cannot reach. For there on the bracken lie two vipers sunning their carelessly flung coils. One is a lithe, young-looking, though full-grown, male, the other a thicker, more sluggish-looking female. He is a plain grey viper ; she has a distinctly rosy tinge, both in the black that becomes a sort of deep maroon and in the lighter part of her pattern. They are so near that we can confirm the first impression as to their sex by the relative length of their tails. Then, as our eyes roam a little to see what else may be present, they are caught by a slightly warmer tint in the shadow of one of those honeysuckle tangles. It was but a spot of slightly alien colour that caught the eye, which, steadily focussed, wrests other items of the bush's secret. Yes, we have got it at last. We have managed, or shall we say happened, to spot in this quiet wood a hare sitting on her form. Hundreds of times we have had them burst out from our very feet, and dozens of other times, no doubt, have passed them by without being aware of their existence. But here is a hare discovered before her bolt, and, within four yards of her, two vipers caught in their siesta. As we look from one to the other, something speaks to the hare, and like a furred tornado she bundles from her seat and bounds away in a scurry of dead leaves. In the same second the place of the vipers is empty. It is as though they had melted into their bed of bracken. Not a stirred twig shows which way they went ; there is nothing but a colour impression to persuade us that they were really there. The hare has at least left the "house" in the

honeysuckle, the roof arched to her back and the floor shaped to fit the long hind-legs that shot her into safety.

The beauties of our hanger are unusually contemporaneous this year. The blackthorn hedge that guards it is a foam of blossoms, as it should have been a month ago. Who has ever seen blackthorn before companioned by bluebells, and opening its buds to the full glory of the primroses? And there goes a bird with the blackness of winter blackthorn and the whiteness of its spring blossoms. Its long-winged hawking flight proclaims it to any one a flycatcher. We cannot retain such a beauty as the pied flycatcher in our southern wood. It must fare on to one of its restricted haunts, probably as far north as Cumberland. It is all the dearer in our Sussex hanger because its visit is, like the blackthorn blossom, so transient. Then, as we pass through the fairy birches, with their net-like cascades spangled with tiniest green, a puff-throated, black-headed bird flies out, and, perching craningly close to our path, pours out a piping, rattling run of music, the sole song of its repertory, that throws any of the nightingale's hundred fancies into the shade. It is, of course, Ireland's nightingale, the blackcap, here to stay the summer, for our hanger is blessed as the nesting-place of these two princes of song.

THE SPRING-SUMMER OF THE ALPS

AN English newspaper has crossed the sea, traversed France, fallen in Lausanne, skirted the Lake of Geneva, mounted by the brawling Rhône in its flat little valley not long since a larger river-bed, twisted perilously up by the Val d'Anniviers, and climbed to our summer resting-place just under the snows of the Weisshorn. Our English paper tells us of nipping winds and fierce assaults of hail, and of millions compelled to take their holiday pleasures sadly because they had no possible excuse to take them gaily. In full-blown spring, a time that most Britons are willing to recognise as summer, men must shiver and refuse the kindly invitation of mossy bank or flowery hillside.

Alpine spring is spring and summer all in one. Five days ago, as we climbed up here by the only mule-track, we walked into a sprinkling of snow about two hundred feet below one five-thousand-feet-high village. When we woke up, the pines and other trees beneath the windows were crusted inch-deep on every twig, and the mountains across the little valley were white over all their rocky heads, with long white fingers reaching down to the brawling Navigenze. But while breakfast went forward, the trees shook

themselves and great flakes of snow dropped from their branches. The powdered pines resumed their rich greens, and the snow-line began its retreat towards its ten-thousand-foot perpetual level. Spring came into the valley the same day as ourselves, and the flowers that in England sort themselves along a calendar of three months all came at once as soon as the snow-blanket was removed.

By a bare head the impatient crocus was first. The highest pastures next the snow-banks of more than a foot in depth are spangled as though with daisies by their little white caps. Of yellow crocuses there are none, while purple are rare, though sometimes we find a whole colony of the latter in some spot that for some reason especially suits their complexion. Alpine wild bees, often of the same species as ours, but more lavishly hairy and with broader and richer bands of yellow, dart with unerring aim from crocus cup to cup. Each bee has a large field to cover, for flowers are largely out of proportion to their numbers, and they work at Alpine pressure. After the crocuses come the gentians, opening their stars of intensest royal blue in little groups that not only attract the eye, but seem to pull the face round with an insistent demand that they shall be seen. After the common gentian, only because its range is a little higher, comes the great-belled *Acaulis*, with blossoms an inch and a half wide and nearly three inches deep in the tube. They are as bright in hue as their little congeners, but more sky-blue in shade and varying more from one blossom to another.

Yellow, the universal spring colour in England, is comparatively rare here. Cowslips ramble up to seven

or eight thousand feet, suffering nightly incarceration in ice without their good looks of daytime being in the least impaired. Colt's-foot, which we saw in late February, is here just coming into blossom with our geraniums of June and mezereon of January. Then the tall globe-flower, handsomest of buttercups, floods certain pastures with its golden balls, side by side with infrequent rock-rose, cinquefoil, bird's-foot, trefoil, and a few others of the yellow persuasion. And, as though to make up for the lack of other flowers of the colour, a species of Alpine violet is brightest yellow. A primrose, on the other hand, has chosen a very pretty pink for its colour. It bears its blossom on a stalk polyanthus-wise, and each petal is deeply cut till it resembles that of a campion. We should give this little *Primula viscosa* the palm for dainty beauty, even among the floral glories of our snow-clad mountains.

Most of the lower slopes of our Alps, however steep, are claimed by the industrious Swiss as meadows. The clashing torrent is tapped at points in its wild descent, and sent zigzagging in gentle rivulets across and across the slopes. On the right day the channels are opened, and slopes that have been dry all the winter are watered at the roots. Up comes the whole medley of flowers that do duty for grass, and the rich ranks of which will be laid twice in heavy, odorous swathe before the summer ends. Wild rhubarb follows the wettest lines; lilies, anemones, and strange purple grape-hyacinths, with vivid heads of long, aimless filaments, jostle one another without the intervention of grass. Geraniums, campions, and vetches revel together without the faintest

notion of precedence. Spring crocus opens the ball and autumn crocus closes it, but instead of slowly thawing to the social impulse one by one, the whole concourse dances from the opening bar till the end.

Shrillest crickets pierce the air with their clamour. It seems as though nothing smaller than a bird could produce so strong a song, and the stranger would treat with confident incredulity the assertion that any insect could so shout merely by lifting and depressing a leg. Butterflies abound, from such eagles of the tribe as the white admiral to the exquisitely sombre mountain winglet, the dainty Apollo, our well-beloved orange-tip and blues running down to the merest dots as butterflies go. There is a strange, whirling insect got up in greenish gold that hurls itself about with the plainest conviction that life is short and must be made the most of. We find one of them fresh from its chrysalis, drying its young wings on a bennet. Its body is an inch long, and terminates behind in a tooth-guarded ovipositor like that of a dragon-fly. But from its head project long and wide antennæ, heavily furnished with knobs that go to proclaim it a butterfly. Its wings, again, are not scaled, but just coloured in places with heavy reticulation like the green drake and others of the dragon-fly family.

The second crop of winged insects is yet more in evidence than the first. Caterpillars of every shape, size, and colour eat all day long, secure from the birds in a hairy covering. Only the big-jawed ants sometimes pull them down and worry them along the ant-roads to a place where their juices will be welcome to young mouths. Other caterpillars, smooth ones of the garden-carpet type, are seized by mason-wasps

and carried to their tunnels in a sand-bank and given to the slow death of being eaten alive. One such bank swarms with the active little wasps, so that you could scarcely point out a site where one more tunnel could be driven. Two days ago not an insect stirred there. Thus does life awake, once the signal of winter's departure has been given.

Man is perforce a migrant in these high valleys. Tradition derives the inhabitants of our own particular region from the Huns that Attila persecuted and drove from the plains. Nomad blood is scarcely needed to account for migration to and from such a winter-smitten district. To the sound of cow-bells they come at their appointed season from the lower levels of their winter sojourn to the greenest and most flowery slopes beneath the snow. These closely packed summer villages, tenanted only by care-takers in winter, dot the May levels, while ever higher and higher around them are to be seen the barns which tourists call chalets, which house cattle and cowherd in the cold nights that must be expected all the year round. The truly Alpine pastures and their barns will remain in deep snow for another month, and will scarcely be grazed before August. But every day the mellow jangle of the cow-bell goes a little higher among the bell-gentians and the yellow stars of Bethlehem, and the pine-groves, where the ponderous nut-cracker and the jay revel in the return of continuous sunshine.

WEATHER SUPERSTITIONS

GARDENER says that he is sure we shall have May frosts this year. He has read in his favourite almanac, written last August, the very days that are to have frosty nights. He admits that, judging by past years, his favourite almanac may be incorrect to the extent of a day or two; he cannot quite see how this matter was to be known nearly a year ago, but that there will be frosts in May he does not doubt. We have been considering the advisability of making sure of the apple-blossom by putting little oil-stoves about the garden to raise the temperature on frosty nights, just above the point where the damage is done. Gardener, with the aid of his almanac, can say which is the week wherein the lamps would meet and defeat the May frosts, which this year are to be our portion. We should waste oil no doubt for a night or two, but on two or three nights we should do a work that would greatly redound to our wealth and pleasure when apple-harvest comes.

Our climate is a wonderfully good one for the almanac-makers. Changes in the weather are so frequent and sudden that we place little reliance on the twenty-four hours' forecast of the Meteorological Bureau. Something far more wonderful than a

government office—something in the nature of witchcraft—is needed to steer the horticulturist through the dangers of such weather. So the astrologer tells us not only the coming fate of empires and ministries, and the dangers that befall every humble person born at certain conjunctions of the planets, but, if you will read him carefully, the fluctuations of Dover A's, the frosts of May, and the hail-storms of July. If, as usually happens, the prediction is falsified, no one says anything about it, but on the rare occasions when some cryptic oracle is made clear by a dramatic happening, the fame of the prophet is renewed for many years. Ever since one of them foretold a snow-storm in July that actually came off, his trustworthiness has been secure against every disappointment.

If that nipping frost that, in fact, comes almost every year does not come this year at all, gardener will not be disturbed in his faith. Some purely terrestrial event must have interfered with the influences of the stars. Even at the dawn of the week for which calamity has been predicted, the countryside oracle can tell you that the almanac man has somehow made a miscalculation. He is in the superior position of him who told the parson that it was no good praying for rain with the wind in such and such a quarter. He would debate the question of next week's weather with the astrologer without deference or respect, but the question of next year's weather is in the province of the wizard, and when seen in print many months beforehand, it must be considered as a magic beyond the countryman's comprehension.

It cannot be said that the man who depends on the weather for his living is hampered by any miscalculation that the long-distance weather prophet may make. He does not practise any costly means of counteracting the effect of untimely frost or hail-storm, nor have the insurance companies yet offered him weekly or monthly weather policies. The prospect of a blizzard in June no more stays the hand of the sower in May than the sincerest belief that the world will be totally destroyed next year prevents us from buying houses or planting orchards. If we had to decide between two practically negligible quantities, we should say that the countryman is more misled by perennial superstition than by the pretensions of astrologers. The only heavenly body he believes in as a disturber of the earth's weather is the moon, and therein he is no doubt in the main right. But he keeps no sort of record to show whether his too arbitrary estimate of the rules of the moon is right or wrong, and most that he says about the moon is pure superstition. The notion that the young moon on her back holds water, and, therefore, signifies a wet month, is better held by the cockney than the countryman. Nevertheless, it is, of course, of country origin, and still stands for a good deal with otherwise serious weather prophets. The belief that the weather at the new moon is a sample that will be proved in bulk until the full is universal: if the full moon does not change it, then there is nothing to do but wait and see what the next new moon will do. As changes in our climate are never so dramatic that you can say that a single day has brought them about, it is hard to say exactly when they begin, and

if they come within three days before or three days after a change of the moon, the influence of the moon is well established.

It is when the purely human divisions of time are made arbiters of the weather that the science of weather lore falls into purest superstition. Thus a wet Friday is commonly held to foretell a wet Sunday, though, to do him justice, the rustic makes fun of himself by adding, "Wet Sunday, wet all the week." It would follow that once we got a wet Friday or a wet Sunday we should never have a fine day again. The conventional day added to the established order of the moon gives one of the most pessimistic of all weather predictions, and one which in the experience of the writer is as firmly held as any. It runs:

"Saturday's new and Sunday's full,
Never was dry and never 'ull."

There is no corresponding dead-certainty prediction of a month's fine weather. Some might hold that this is a sign of pessimism in the countryman, but it easily bears another significance. Normal weather is fine—that is, good for crops and man and beast. In fact, the very word weather means bad weather in common American parlance, whither it went, no doubt, from Puritan England. In this sense, if there were no weather at all, we should do very well. April showers are not weather, though April blizzards are. A wet day after mangold planting is not weather, but a wet day when the hay is ready to cart would undoubtedly rank as such. If we can get our rules of bad weather, the good weather will take care of

itself. It is because the English climate commonly exceeds on the side of rain that the apparent enemies of Horus, really his collaborators in fortunate husbandry, are dreaded, and news of their advent eagerly canvassed.

It is a tribute to our climate that there are no popular beliefs about really untimely events like frost, hail-storms, and nipping winds in the summer months. These are entirely in the province of the prophetic almanac-makers. In great severity they are so infrequent that they may well be due to the unprovoked malignity of Mars or the mischief of Saturn. We never descend to the anxious depths of the French commune that begged its mayor to have all blackthorns rooted out in order to abolish the frost that comes when they are in blossom. There are just a few critical days in spring and summer when a really hard night-frost, preceded and followed by certain other conditions, can do an immense amount of harm. Fortunately, or unfortunately, those conditions fall with comparative rarity. The "unfortunately" is hazarded because if the calamity were more frequent it is likely that we should be able to mitigate it by the simple means found effective in other countries. Regular fruit-growers are finding that it pays to take precautions against night-frosts, even though in four years out of five they prove to have been unneeded. The ordinary man has his consolations. He regards the gifts of his orchards in good years as a bounty. If he has not his apples, he has his grass and the crops of his fields of many times the acreage. Moreover, it is good that the trees should have an occasional rest

and bear a larger crop to make up for it next year. It is not an attitude that makes for commercial success, but it shows the proportion between the occasional dramatic errors of our climate and the going wrong of a whole season. The real calamities are such summers as that of 1909, when in many districts the harvest was ungarnered till November, and of 1910, when nothing ripened, from grass to apples, and the mould of loss ate into all the farmer's profits. No wonder that the moon and other oracles should have been pored upon as they never had been, and that we scan our almanacs to see what manner of summer may be next before us. The past we know, the present we know: we want to know the future, and will not hear that it is unknowable.

THE EARLY MARKET

THERE are tender sticks of asparagus at Covent Garden, and French beans of a very delicate green. Only ounces where, in a few weeks, there will be tons, every separate growth of such value that you would think each must be entered in a book under its own name. The first-fruits of the earth offered up, if the truth must be told, to the shrine of Mammon, with a keen eye to sequent blessing to the worshipper. They are far more precious than the oranges and bananas that the ships bring in such quantities from other climes that they are cheaper than our own apples. These tender greenlings belong to our own clime, pioneers many files ahead of robuster growths of the same kind that will bless even the moorland cottager when Thermidor comes. Capricious Nature, aided more and more by man, grows them in seams and pockets of her own all among the snow-fields and the dead and bitter wastes that belong to the temperate climes during the absence of the sun. Some of them are from no farther south than Devonshire, some may grow within a league of London, and some even two hundred miles north, in the right sunny valley near the warm western sea that laves North Wales.

Others, again, lie in a valley in the neighbourhood of Hyères, where the landlords reap a rich harvest of rents, and the tenants, we hope, get a little back. The clever prospector could, if our land laws allowed, find many a streak of early soil that would make these bundles of very early vegetables a good deal less exiguous than they are.

Any one who knows the fields and woods among which he lives can tell where, with great regularity, the first snowdrop comes up, the ferns first unfold, the sap first runs into beech or ash. Perhaps he can give reasons, more or less satisfactory, for the apparent bending of the isothermal line. Can he say, for example, why it is that the nettles present us so early with the young shoots, greatly valued by our ancestors before the cabbage was discovered? Is it because the nettle has an early habit, because its acid, like formic acid, is a forcer of growth, or because the nettle seizes the well-drained spots where the bacterial life wakes soon, after the drowning influence of winter? Possibly all three are important factors, but, since the nettle has gone out of favour as a table vegetable, the gardener has only as yet applied the last of them. The hedge-bank supplies us with an object-lesson in precocity that embraces many species and natural orders. Added to the drainage that belongs to a mound pierced with roots and the burrows of animals are the protection of a slight wall, the warming of the air by the chemical action of the boughs, never entirely at rest, and the holding of warmth in the interstices of the twigs. Given the same downpouring of sunshine by day, the hedge and the near neighbourhood of the hedge will hold

it far longer than the open field, and will start the next day with a better balance in hand. So we see that not only in the hedge, but near the hedge and on both sides of it, the fool's-parsley, hog-weed, ground-ivy, cowslips, violets, bluebells, and all manner of things come up much earlier than the things in the field.

The lesson of the hedge has been partly learnt by the market gardener. In the neighbourhood of Paris, hundreds of miles of walls have been built for the sheltering of early vegetables. The brick wall possesses in superior degree one of the virtues of the hedge—opposition to wind—but it is obviously inferior in the two other respects mentioned above. Hedges are used instead, to some extent, in the market gardens of Sussex, and many a Cornishman has raised a row of early potatoes on the lee side of a hedge; but, generally, the roots of such a living rampart have been found altogether too greedy and unmanageable in rich garden soil, even before the cheapening of glass put the device out of date. When land can be covered in glass for about sixpence the square foot, the man who has security of tenure and fixity of rent has very little inducement to cumber it with mere sheltering walls and hedges. A new influence, therefore, bends the isothermal line into contortions that have no relation to the impingement of the sea, the annual average of sunshine, the shelter of mountains, or the nature of the soil. The right system of tenure on cold clay or barren sand will produce green peas by the mile, and French beans by the ton, long before even the blossoms appear on richer and better favoured sites, where the tenancy is annual and arbitrary.

The early market in vegetables and flowers, as it is notoriously in fish, is an uncertain and even perilous quest. A week makes all the difference between the top price and one far below the top, between a due and an inadequate return on capital expenditure and annual labour. To take one example out of many: in the first week of the Jersey early potato crop the price is usually double, sometimes more than double, that of the third week. Moreover, the first week shows a marked tendency to become earlier every year. The first of February may have been an excellent market-day for early asparagus last year, yet hopelessly out-of-date this year. The tiny quantities of the first gathering cannot be marketed to advantage without co-operation between the growers of the same district, and that is one of the reasons why districts become famous as market-gardening centres. The man who grows all of one crop may have chosen the wrong crop for the year. His only rule often is to grow that which was a glut in the market in the year gone by; but it is obvious that, if all work by the same rule, the same crop will be a drug again. The plan of several crops, aided by co-operative marketing, gives an average certainty as opposed to the speculation of the single venture.

We cannot wait for the rays of this year's sun, even though we have the magic of glass to catch them out of the wind, and hold them through the night. We dig up the bottled sunshine of many million years ago, and warm our greenhouses so that they give pine-apples in wheat latitudes, and roses at Christmas. Kropotkin says that grapes in Brussels at the beginning of summer are not dearer than grapes in

Switzerland in October. In the nature of things, grapes from Manchester or South Wales should be cheaper than grapes from Italy, though, no doubt, the second-hand sunshine does not ripen them with the same aroma as the direct rays. But now we have a purer form of derived sunshine than hot water or the direct heat of a coke fire. The electric discharge as a stimulant of vegetable growth has been proved economical even on a field scale, and for more than ten years they have been growing lettuces for Chicago under the artificial sun of an arc lamp. Only the heavy guerdon of the rich could have paid at first for these costly attempts to get earlier and earlier vegetables, fruits, and flowers; but the day seems even now close at hand when the products of hot-house culture may be had at a democratic price at all times of the year.

It might be thought that the purely gardening craft was losing dignity and importance by comparison with those of the engineer, chemist, and electrician. But the world still looks to the plant-breeder and evolutionist to solve many of its difficulties. He has kept his comparatively unobserved step in the march of progress by producing earlier and more prolific tomatoes, logan-berries and other fruits, strawberries that bear all the year round, and other less notorious, though no less important, improvements. Some day, perhaps, he will tame some poisonous but precocious wildling, like the arum, and give us a new form of food that shall supersede many. We could do a great deal more with that wholesome plant, the lettuce, if it grew on a perennial root-stock, like the rhubarb or the seakale. When we note the vigour

with which the dandelion shoots out in spring, we wonder why that member of the order was not the one selected by the first gardener to become the progenitor of the greatest salad plant. On the other hand, why cannot the same hand that has made the carrot become biennial, make the lettuce produce new hearts on an old crown? The way of evolution is slow, but when we think how it has been in effect hastened by such hustlers as Mr. Luther Burbank, we are prepared to see all our old vegetables, excellent as they are, "scrapped" within the next decade.

SUMMER

But he whose heart will bound to mark
The full bright burst of summer morn,
Loves too each little dewy spark
By leaf or floweret worn :
Cheap forms, and common hues, 'tis true,
Through the bright shower-drop meet his view ;
The colouring may be of this earth ;
The lustre comes of heavenly birth.

KEBLE.

THE FLOWERY WAY

WITHIN the village, where the road winds under the hill before climbing the shoulder, the celandine is now in full glory. Axle-high, all along the side of the road, the dark, glossy leaves are starred with the polished blossom, and a little maiden, free from the fear of motor-cars in this quiet and ill-metalled lane, is gathering them into a golden handful. Children like their flowers in leafless bunches—primroses or celandine or violets pressed one by one into a palpable hoard of blossom and a solidity of scent. Their mothers please them by finding a crock to put the bunches in, and at this time of the year every cottage will show upon the dresser one or other of the favourite spring flowers. Afterwards, when flowers are everywhere and of many kinds, less notice is taken of them. One would think that the spring flowers would be exterminated and the summer species far more common, but even the violets that are for a week or two sought far and wide, at last bloom unheeded all through the village street, to come up just as abundantly again next year.

The colt's-foot is comparatively immune, but the dandelions have to pay heavy toll to the acquisitive instincts of the children. Every paw in the place

will be found to be blackened with the sticky juice with which the dandelions strive in vain to protect themselves. They save themselves at last by the same device of numbers that the other flowers use. In the tangle of fool's-parsley, ground-ivy, and a hundred other hedge-side plants, their big, round faces appeal to the bees even more strongly than to the children. Every one of them bears a tell-tale spot, which resolves itself into a small *Andrena* or other bee, the blackest of which will soon be painted wholly yellow with pollen. Wasplets also of several species, and wasp-like saw-flies, scarcely to be distinguished from them, dart about the bank, some after minute caterpillars, others with eggs that will make caterpillars. In a ten-mile tramp you will scarcely find more species of flowers or insects, so closely does the country hug this near suburb of quite an important manufacturing town.

In a few minutes we are beyond the range of the violet-pickers. Our own fingers itch with the pre-historic impulse to pluck, as, one by one, the handsome white blossoms peep out from the herbage. Surely nothing is more tempting than these. The tense curl of the petals makes the light glance and darken with the tenderest, yet crispest, of shading. They seem carven rather than shaped, but carven from a material far finer than ivory, and with tools that no man could wield. The white phlox of summer is something like them. No coloured surface can play such miracles with the light. It is as though nature were still a tyro in colour, but had reached perfection in black-and-white. Some of our sweet violets are purely pallid. They seem rather

less than robust by comparison with those that have, at the edge of the lower petal, a dash of pink, to make the white face whiter, but of a less bloodless white. The purple violets of the sweet species are few and far between, scarcely one in a hundred, but here come great bunches of the dog-violet, twenty or thirty perfect blooms upon a root, and all heaped above the leaves in an inflorescence that takes the world by storm. The honey-guide lines are much more plainly marked in this species, and we frequently see a bee come to them, while the sweet violets, for all their scent, are unvisited. Their traffic is, doubtless, with the moths by night, and that is why the white variety is so much more abundant than the purple. It must be noted, however, that after this glad season of blossom is over, the violets, sweet and scentless, produce quite inconspicuous flowers, and from them an abundance of seed. Is the blossom, then, purely an act of rejoicing at the return of summer, a piece of holiday-making, after which comes stern business? There are many deductions, egoistic and otherwise, that man is at liberty to make from this inscrutable habit of the violet. And there is the experiment yet to make whether the seed from a full blossom will produce stronger plants or more æsthetic plants, or in what way differing from the progeny of a petal-less flower on the same root.

We have run the gauntlet of the violets, not without having a few trophies of their winsomeness in our buttonhole. But, oh for a bit of Alice's cake wherewith to make ourselves about two feet high for a revel in yonder meadow of cowslips! There they stand, as they did years and years ago, in their pale,

luminous green, with flowers modelled in solid honey. Not so tall and many-flowered as in former years, and surely the cowslips of old were liable to take wing and fly away if you were not very quick to pick them. At any rate, we remember having to run at all our speed, this way and that, in order to pick a good bunch of the finest blooms. They stand still enough, and give us time enough to pick them now. But what memories, what fancies, what revelations are called up at the plunging of the nose into a posy of cowslips! If there is any rejuvenating fluid, it ought to be pressed, with due observance of ceremony and time and place, from those delicately fragrant stalks. We have always known them as cowslips, and have never heard from the lips of those who habitually use them any of the other familiar names. In Essex they are loved under the name of "paigles," in Cambridgeshire as "beagles," in Herefordshire, it is said, as "cow-peggles." Are there not also those who call them "gallygaskins," "horse-buckles," "Peter-keys"? while the staid Scot gives up all attempt to find a concrete name for such beauties, and calls them "sobrach," or delight.

In the lower part of the meadow is another well-known flower. Whenever we look at it we can feel the cold water oozing in at the gaps in our shoes, as it did when we were wont to pick the "crazies" from their native marsh. We hear again the "pop" with which their hollow stems broke, and yielded to us the great cool heads that have given the flowers the name of "water-blobs." Another name is "mari-blobs," linking them up with Shakespeare's "winking mary-buds," and we have, besides, "king-cups,"

"golds," "drunkards," "meadow-routs," and, lastly, "hobble-bobbles."

Coming up the lane, for we have now topped the hill, and are descending again, are two little girls carrying bunches of bitter-cress or cuckoo-flowers; but we decide not to know our old friends, so ask for and get the name of "milk-maids." It is a good name. Better, perhaps, than "ladies'-smocks." They are milk-maids in very pale lilac dresses, or sometimes in white, for the flower has many hues. But the palest of them will appear pink beside the stitchwort, which is now pushing up the characteristic knotted stems of the pink family all along the hedges, which it will soon star all over with dazzling white. Everything, even the white champions that the mid-summer moths love so well, must yield in brilliance and purity to the "snow in summer."

We do not think there is a prettier plant of the lanes than wood-sorrel. We have not seen it in such profusion in any other lane than this, for it usually preserves its name by growing haphazard in the woods. But here it is all along the banks by the roadside, and in great profusion. In tenderest green, the trefoil leaves tempt us to know again the sweet sharpness of "cuckoo's meat," but the thousands of bell-like flowers move the soul to less carnal feelings. Why should this white flower veil itself so delicately, with scarcely perceptible purple? It is one of the gratuities of floral excellence, not to be ascribed by any means to sordid struggle. No bee has demanded such an embellishment, no animal is warned off by it. Possibly it has to do with the excessive thinness of the petals, or it may be that the wood-sorrel has

given up a purple livery, and cannot get rid of the tell-tale blue blood. We like our wood-sorrel in the sun; we like it none the less in the rain. When every blade of grass in this lane holds a dewdrop, none holds them half so prettily as the half-closed blossoms of the wood-sorrel. There is no need wholly to close for an April storm. When fire flashes from liquid diamonds all along the hedgerow, again the wood-sorrel is easily queen of the lane. A picture of April should show just a yard of this bank, with the fairy cups laughing away the jewels of the last shower, and opening their faces to the next sun-bath. No need and no room for the conventional fairies. You can see them peeping and frisking from every muslin skirt of the wood-sorrel.

THE COMPLETE CHANGE

IT is well known that serious diseases necessitate heroic remedies. Seven weeks' work in London-on-the-clay is far too serious a disease to be cured by a week of London-by-the-sea. What can homeopathy do for a soul bowed down by an unbroken contemplation of bricks and mortar, in an atmosphere that is produced from chimney-pots, whose best views are those most obscured by smoke, whose very pavements are not of real stone, but of some composition cast by a process that takes a second for every thousand years that nature needs? Let us put our foot, even if it be a bare foot, in a field of growing grass, let the eye drink in the delights of a fresh landscape starred with spring flowers, let the nostrils breathe the air that meets a hill-top under blue sky, and the ear tingle to the rapturous song of birds newly returned to the scene they love best on earth.

The hedges beside the lanes stand on tall banks, and a wealth of running verdure has knit hedge and bank together so that we can scarcely see where one ends and the other begins. The stitchwort has woven them with its long green threads, and has splashed them with milk-white blossoms that shame those of the may reaching down to draw the eye up to the

masses that crown the hedge. The pointed brown buds of red campion are bursting into flowers of their own exclusive pink, adorning the speckled shade with the ever-loved "billy-buttons" of village lore. Another broad-leaved, straight-stalked plant has opened its cruciform flowers of Whitsuntide white that proclaim it "Jack by the hedge." And hark how the nightingale shakes and trills, and almost loses control of its tumultuous song. All is far different from the buzzing of a motor-'bus in the Strand, or the yelping clamour of brokers in the Stock Exchange.

From the top of a little hill, where we rest and unpack a little food from our rucksacks, we have such a landscape as no painter will ever feign. The far blue sky with rolled cloud domes a valley decked with green in a thousand shades and shapes, from the almost black of Scotch pine to the green pyramids of larch, the newly burst beech, feathery birch, and golden domes of oak. The richly grown fields, which showed a week ago a mere semé of pale cowslips, are now strewn with buttercups that gather, as the view recedes, into an unbroken blaze of gold. Or they are powdered with the red mist of sorrel, through which the first white moons of the marguerites are breaking, or girt with a rising spume of fool's-parsley, by some called "Devil's oatmeal." The whitethroat soars and dives into this high forest of herbaceous growth, singing his tin-whistle imitation of the nightingale, which breaks at the important passages into a frankly discordant noise, more like that of a swearing cat. Orange-tip butterflies amble from flower to flower in the aimless way that contrasts

so completely with the stodginess of their caterpillar existence.

The heart of the valley holds one of the prettiest villages in England, made of white-faced, grey-tiled houses standing one above the other on the steep, larch-crowned hillsides. Every front door is open to admit the golden rays and the cool spicy breezes that constitute the latest message of summer. Theirs is the best position for a siege that sees the whole year round, but we on our hill-top are undoubtedly better off to-day. Shall we unfold our tent and pitch here for the night under the beech bough gemmed with tiny round leaves, whence the tawny owl may "whoo-oo-oo" its wild lullaby and the blackbird call us at sunrise?

Even in our poor London galleries there are compositions of coloured putty on rag that reveal a succession of new beauties to him who sits before one of them for hours—yesterday, to-day, and to-morrow. How much more should we spend dawns and noons and waning evenings before some of these marvellous works of nature that tourists dismiss gaily after half an hour's inspection? We can often pitch our little tent at a point of vantage rather better than that which men spend pounds in hotel bills and coach rides to occupy while they can press a camera button. The Ladies' View of the upper lake of Killarney just begins to be seen when one has dozed on it, slept on it, and awakened to see the dawn chase the morning mists from its mirrors and the shadows of the mountains from its green isles. The Gap of Dunloe and the packed range of the McGillicuddies, with a new mood for every hour of the day, make a camping-site near

the edge of Looscaunagh Lough very hard to leave. Derwentwater in reflective calm, in tears, in raging storm, yields its pictorial charms one by one to him who lives among them, not in a farmhouse built to secure comfort in winter, but in the nominal summer shelter of a bit of canvas.

It needs not that last sentence to scare the case-hardened townsman to whom the four walls that emphatically do "a prison make" have become second nature. He is beyond the cure of the complete change. To ask him to live in a region destitute of such essential institutions as the fishmonger's slab, the poulterer's dresser, the tin of milk on the doorstep, would be cruelty without kindness. But the topsy-turvy person to whom the pavements are an incubus and conveniences a nuisance longs for a proper excuse for the practice of the most difficult methods of supplying his wants. It is the fashion for the sportsman to sneer at the pot-hunter. But in camp we learn that sportsman and pot-hunter are complements of the complete man. The fly is never properly cast when we don't quite know what we shall do with the fish, presuming that we happen to land him. When we know that the camp-fire is already lit for the trout it is our bounden duty to catch, the boil of a rising fish means three times as much as it does to the idle angler. And the man who is out to fill a frying-pan knows exactly when his angling has reached its legitimate end. Then he can wind up his tackle and watch without a particle of envy his brother, the kingfisher, securing a meal in his own way. And as he walks home he sees the cheery dipper dashing under water in quest of insects,

to be triumphantly eaten on a stone in mid-stream. It is a wonder if our angler does not so far imitate the bird as to take a plunge himself before carrying home the breakfast.

We are content to acquiesce openly in the home criticisms of camp cooking, founded, of course, on nothing more substantial than a sense of feminine difficulty in learning the art of man's inferiority on that side. Cooking, however, is one of the most conservative of sciences, and the fact is that the camp pot has yielded to unreverent hands some notable secrets. A collection of all the vegetables of the season sliced and braised in that accommodating utensil, the camp kettle, furnishes a most profitable meal. Camp omelettes frequently excel the best products of Piccadilly, and the superior quality of camp pancakes makes us wonder whether there is not some special virtue in tossing them in the open air. Then, with our simple apparatus, we can arrange to perfection what our friends at home will not attempt—the self-cooked meal. All the while we are absent in the mountains on a tramp or climb that takes from breakfast to supper time, well-instructed fire and water gently exchange caloric, and the meal is ready as we drop in camp, the last ounce of walking power gone from us.

These are sordid details. We eat in town and we eat on wild holiday, but there the resemblance ends. We feel like souls newly escaped from the chrysalis, when the eternal night air sweeps across the brow and the myriad stars look down on the hill they have seen built up, wiped down, dipped mile-deep in the sea and raised again for the last hundred million years.

The thought of our town existence, ended yesterday, is dim as the memory of a former life. Such affinity as we had with its pavement (and how slight it must have been!) is destroyed in a moment by the sight of a familiar bee questing in one of a myriad flowers.

THE ONE SUNRISE

THE one sunrise of the year is that of the true Easter morning—that is, the day, which cannot always be a Sunday, when the spring moon is at the full. But nineteen years out of twenty that sunrise does not, as it were, take place, our spring climate being safely expected to produce such clouds as to flout the moon and make a dull smudge of the red eye of dawn. So this year's Easter gave the one sunrise of many years ; such a one as we cannot expect to see for at least another decade. Many a midsummer levée has been more chilly and more disappointing—in fact, none that we remember has been so cheerful or splendid as this that ushered in one of the earliest days of spring.

At three the full moon is riding unchallenged in the sky. This astonishing April produces not a single cloud to blur her reign, no cold shower to make us regret an early rising, scarcely any dew or mist in the deepest hollows. The moon is over our left shoulder, and we walk towards the dawn. The shadow flung on the white road seems as bright as that of day, but the grass at the roadside, the walls, the rolling banks and hills, even the trees against the sky, yield no details in the light that comes only at second-hand from the sun. It is just a landscape most faintly

adumbrated in ochreous smudges or tawny negative lines on a general grey of nothingness. Presently, as we march steadily eastward, one hill looms up darker than the others. It is behind that hill that the sun must be. On another morning we should take it for the black cloud that so often enviously accompanies an English dawn, but there are to be no clouds to-day. Presently the trees on its summit appear, with tiny rounded tops, and the morning sky showing between their outflanking trunks.

The sky at the zenith is of that indefinite, evasive blue with which sometimes very artistic jewellers display their diamonds. They copied it, of course, as best they could, from the midnight sky in which the stars shine. But the morning sky is altogether an elusive colour. It is all the colours of an opal, without the opal's liveliness of change, but yet seeming to change invisibly as we look at any part of it. At first sight it is of a pink flush—no, it is ceruleous; nay, pea-green shrouded in French grey. Or it is the blue of blue eyes veined with fire, provided always that you cannot see the veins, or that they come and go like a perfectly visionary network. The old painters of stained-glass windows did the best they could by doing their skies in a design of flowers, and no painter since has got nearer the mystery than that.

On the opal eastern sky is drawn with exquisite softness but complete fidelity to detail the complicated tracery of the trees. The rambling, upright twigs, with catkins on them that seem at almost any distance as woolly as they are; the weeping besoms of the wych-elm; the sturdy, strenuous oak, softened,

like all the others, by the buds at the end of every twig. Then here is a stronger picture in evergreen: two or three Scotch pines, one with thick ivy on its stem. The smooth sky is behind them, shimmering from palest blue to greyest pink, getting through occasional glimpses in the foliage and making it all a fathomless black, in which we imagine we can see a tinge of green—because our daylight experience has told us that it is green.

Up to now the sepia pictures of the elms on "the Bowl of Night" have been strictly silhouettes. We have been moving in a two-dimensional world. Suddenly an ash comes overhead at the turn of the road. The young light gleams round its limbs from back to front, and makes a revelation as astonishing as though the fourth dimension, which no philosopher really believes in, had been brought to common notice. The tawny flush behind the black hill has a rosier centre, so that we can tell, as it were, within a yard where the sun will break out. Now the cocks crow up a new day, and the melancholy owls proclaim a dying night. Then would the cuckoo join in, but the day of his arrival is not yet. As we climb the hill to a quaint old steeped town, the bells send down the chimes of five o'clock. Their thin, wiry music could not have been better contrived for this Easter morning fight between Sut and Horus. Every one knows, of course, that victory is a foregone conclusion. "Old Khayyám" is all in the air, so let us have a verse of him:

"Indeed, indeed, Repentance oft before

I swore—but was I sober when I swore?

And then and then came Spring, and Rose-in-hand

My thread-bare Penitence a-pieces tore."

It is dusky blackbirds that sing this on every hand—dozens of them each singing a song of bitter rivalry, but blending into a chorus of great sweetness. There is one blacker than black in the black hedge, within reach of a stick, if we cared to swing it, pouring out the music for which in daytime the thrush often gets undeserved credit. There is another, duskier than dusk, on the dusky road, running across head down to fly after one whose song for some reason has passed the bounds of endurance. There are two tumbling one over the other in most unchorister-like fight. In the little town blackbirds are taking advantage of its desertion by crossing and recrossing the little street at their own sweet will. The moon, still shining behind us, makes the windows gleam, but it cannot throw a shadow on the road. The robin on the west side of the town (the moon's side) winds his rattle as he does at dusk ; but on the eastern side, where more is to be seen of the sun than of the moon, the thrush adds his cheerier music to the sad fluting of the blackbirds.

Now the moon seems no longer a heavenly luminary. It is part of the earth, a disk raised on high (but not so very high) to heliograph news of the sun's coming. The hill to the town has raised us above the sun. He is down there, still behind the same hill, but held in a gulf beneath our feet. And here is a phenomenon we had certainly not expected. Though the sun is still well out of sight, we can feel his warmth on the face as surely as if it were a fire within a few yards. It is like a hot wind coming from the east—the quarter that usually blows us chilly ones. It wafts up from the valley in puffs,

but that is because we are walking eastwards, and the wind is of our own creation. Standing still, the warmth of that quarter can still be felt, but not so distinctly as when we walk. Then, in the bright red patch behind the hill there rises an edge of glowing tinsel, and slowly the sun comes out from the night like a globe of molten iron. When he is clear we swing so as to get him well within the corner of the left eye, and we have the moon still faintly luminous within sight of the right. Not a cloud visible in the whole firmament—a clear course for the Easter sun to run from one horizon to the other.

And later, from one pleasure resort after another comes the news of thirteen hours' sunshine. Good, warming sunshine it is, too, as we can testify. When we had walked some two miles farther we came out from a wood to the corner of a hill that the sun was just gilding. It was half-past six in the morning, but the invitation of the moss just there was so very inviting that we stretched our limbs upon it and slept as safely and as happily as on a midsummer afternoon.

THE BEE'S YEAR

THE bees are going down into the yellow cups of the crocuses. They clamber in by the red stigmas, and come out from the purple-shaded depth smeared with pollen. You can see their shadow through the golden walls, like the shadow of people against a lighted window. In a few days summer has started up from the cold ground, and summer has come out of the cold air. There is nothing so hot as a bee in full quest for floral loot, nothing so bright as a yellow crocus in the sun. Bare beds almost everywhere, dull lawns, trees without leaves, and then, in a favoured spot, showers of brightest jewels upon the grass, pearls and amethyst and gold with bees hot about them. Only, when the crocuses are gone, there will be little else for a while. And the bees that suck them will be dead almost as soon as they.

With the opening of spring the population begins to go down. The life of the bee in work being little more than two months, all those but the youngest that have seen the colony through the winter are finished by a few days' work as water-carriers or gatherers of pollen in the cold and treacherous days with which the year opens. Lucky is the bee-master whose hives were producing healthy young bees up to the middle

of a fine October, for, after the winter quiescence, they will still be capable of some weeks' work. On a fine day in January the writer's bees swarmed out lustily; boiled crawling from the entrance; ran over the hive in an ecstasy of resurrection, and filled the air with the zigzag, aimless flight of joyous beings trying their wings. But, even in that flight, some fell down and finished their life in the first day of awakening. Every day since, when it has not been too cold to stir from the cluster, there have been dead bodies to carry forth or bees that flew out and lacked strength to return. The cluster has closed up on the empty files, losing its power of communal warmth faster than the nights have gained in temperature. The cloud that exercises at midday becomes evidently smaller, and the perilous event, known as "spring dwindling," goes on with accelerated speed.

Now, however, the quality of the life, if not its quantity, goes up. After three weeks' incubation the first batch of young bees hatches. It may be but a square inch of comb, numbering twenty-five cells, but the twenty-five young bees are worth full fifty of the old ones, even if so many should die the same day. The next day there are others, and the next and the next more still, in larger and larger batches. The young bees make better nurses than the old, and raise a still sturdier generation. Yet it is long before the spring dwindling is overtaken and the population of the hive begins to boom. Sometimes it happens that the bees have anticipated fortune by too much, and the hive is starved by over-population. Sometimes that catastrophe is due to the bee-master, who can, by opening the hive and bruising a few cells of honey,

set the bees breeding before the sun does. It is not till the apple blossom comes in still, warm weather that the stores of a rapidly breeding hive will overtake the daily expenditure on food. And then the bees seem to strain every nerve to raise a population that shall bring the community to starvation.

Furious as seems the business of the hive normally in early April, it does not amount to the honey-gathering force that the bee-master appreciates. If he wishes to profit by the apple harvest, he must considerably hasten matters, so as to get a June crowd of bees in April. By setting a little honey flowing from a bruised comb, he tricks the bees into a belief that the season of plenty has begun. As soon as the brood-nest has spread to two combs, he moves them apart and puts an empty comb between, so that the bees hasten to fill up the middle and unite the nursery area. He must have the queen laying vigorously for about six weeks before the honey-flow occurs that he wishes to make use of. So if she is laying a thousand eggs a day, it will be seen that twenty, thirty, forty thousand bees will be available to store honey before the honey harvest is gone. Still not enough. The bee-master must join the population of two hives, either by putting two communities together under a common upper story or by gathering frames of brood from other hives, and thus "doubling" the one that has to produce a surplus. Thus we may, in a season, take forty, eighty, or a hundred pounds of honey from a hive and still leave it the thirty that are necessary to carry it through the winter.

It is not the bee's way to store honey so far in

excess of requirements. Just as at the turn of the year, her first thought is to increase progeny, so a still greater prosperity runs to a still greater increase, adding to the hordes of workers the luxury of drones and young queens. Just when the bee-master expects his populous hives to gather far more honey than they can possibly consume, the bees come swarming out almost to the last one, abandon all their stores, and go off to begin life anew from the first gramme of wax. The issue of a swarm from a hive marked for honey-getting proclaims *pro tanto* the bee-man's failure. He has his means of dealing with it either by prevention or remedy, but, perchance, he sells the swarm to a beginner in bee-craft, and there the tale of the hive begins at the very beginning.

In old days, the work of a newly hived swarm was a very laborious affair. It is always attacked with an amount of energy that is astonishing even by comparison with the bee's normal industry. We save the swarm almost a season's work by giving it frames of wax sheet on which the cells have been planned with walls containing material enough for their completion to the full depth. If the sheets we give them are ten, and weigh a pound, they are equal to a present of forty pounds of honey. Ten days after swarming a large swarm has a superficies of comb equal to nearly twenty square feet, and containing 50,000 cells fully drawn out, the greater number of them filled with young bees, the rest containing from a drop or two to a full complement of honey. We can now put over them another story also full of comb-foundation, barring out the queen by the insertion of a grille through which her subjects but not she can pass.

After a little hesitation, we are able to report the glad news that the bees have "gone up." While the queen is busy downstairs refilling the cells that hatch out there, the upper story is being filled with solid honey. Soon we can lift it and place under it a third box of frames. Next, we can take a story away, throw out the honey, and give back the empty combs to be refilled. Then, as summer wanes, we take away the supers one by one, not returning them when emptied, but keeping the fully drawn-out combs for the bees to fill another year, thus saving the bees still more of the labours they normally must pass through before laying up honey.

Bee-keeping carried to such feverish lengths—asking a hive, and even a swarm, of the year to give us sixty pounds of honey in so poor a climate as ours—savours of sweating. It may be, though no expert has said so, that some of the diseases that devastate the apiaries have origin in the undue extension of hive populations, an extension that should mean attenuation and decrease of individual vitality. The dread Isle of Wight disease does seem to be a kind of nervous debility that might well be reached by this means. Perhaps safety lies in the observance of a maximum dividend of, say, thirty pounds per hive. Perhaps wax-making is a healthy pursuit that the bees ought not to be denied. Certainly the contemplative man takes so much pleasure in the natural activity of his bee that he is little tempted to dabble in the hustling methods of the ultra-expert. In America they even give the bees a shaking now and then to wake them up and set them more vigorously to work. As for the writer,

whose bees are now at the crocuses, he will be happy to see the crowd that goes into the hive with pollen-baskets of orange, yellow, blue, and black daily increase in its own way. He will be happy if, by giving them plenty of air and room, he can prevent them from swarming, and then, when the main honey-flow comes in June, there will be bees enough to find, beyond their own needs, honey for the master, honey for the dame, and a goodly number of combs to give away.

LITTLE FOXES

WHEN we heard in January the thrice-repeated bark of the dog-fox and the melancholy answering scream of the vixen, we knew that the farm would probably have to support little foxes again. The vixen did not, however, return to her old earth under the beech between two hill-fields, with its convenient exits on each side of a stout hedge. It is probable that her careless housekeeping of last summer had made it insanitary. Later the badgers took this earth, nobly undertaking the labour necessary to make it clean and sweet according to their more fastidious taste. Our vixen or another moved farther up-hill, and drew out a romantic and convenient den where its rocky skeleton begins to outcrop with a new steepness. One entrance is high and narrow, because the approach of two limestone blocks makes it so ; the other is shrouded by thin bushes, and gives on an overgrown mound whose bulk testifies to the cavity within that rabbits or foxes of many generations have made.

We did not discover these new quarters (they had not known foxes for many years) till early primroses were beginning to understar the brambles and the yellowing furze. In this little dell beneath the hill an unusual wealth of violets, sweet and purple, had

sprung up, and as we picked a small bunch, attention was caught by a pad-mark in the soft earth. In the yellow sand before the rock portal others were found, and it was seen that here was to be the home of the little foxes. Not many days later, when April was just gliding into May, we heard the tiny whimper that the cubs, usually so silent, make within a few hours of birth.

Be it understood that these are proper wild foxes in a proper wild country. Their ancestors have not been entered at the keeper's kindergarten, fed with shot rabbits, moved into new earths before their own instinct wills it, taught to use brick kennels, brought up motherless, and turned down in new districts where they still run after human beings and fawn upon them like dogs for their food. Our greyhound foxes of the rocks belong entirely to the soil. They yield to the hounds more sport than brushes, and (the truth must be told) have to be kept within bounds with an occasional charge of shot from an infuriated poultry fancier. We were therefore by no means on speaking terms with our vixen, and could scarcely ask her to show us at once her fluffy litter that whimpered so like kittens.

In the gloaming of one evening we saw her leaping in the long grass, chasing ineffectually a rabbit that we could not see. She was but the spectre of a fox, her legs seeming twice their usual length and her body little more than backbone. She was far off, and only seen as she passed between two bushes. We went no nearer, but gave her silent good wishes in her important hunting. A far handsomer creature was the dog-fox, who gathered himself from a hedge where we looked for a rabbit a few evenings later. Well clothed

with muscle beneath his long red fur, and with a goodly brush behind him, he seemed to sail rather than run as he went off in the direction of his vixen's earth nearly half a mile away. We do not doubt that the fine fellow helped his partner to stock her larder in the days of hard hunting that followed the appearance of her family. But as soon as she got strong her jealousy and independence asserted themselves, and the dog's visits to his progeny became considerably rarer.

Our fluffy little friends were less than three weeks old when the earth before the den began to be full of tiny claw marks, that told plainly of their first tottering gambols in the open air, probably when a warm sun drew them forth from their cellar-like quarters. Soon after, they began to be left alone all day, their mother allowing herself the luxury of sleeping above ground in a neighbouring bush. Our spaniel knew the place of her siesta well, from the day when he went too near and got a fright from her silent, snarling teeth that made him cry out as though he had been threatened with the stroke of a whip.

The marvellous thing to be noticed in the field of our foxes is the indifference with which the rabbits regard their powerful enemies. Many a bunny has gone to feed the insatiate vixen and her family. At times, seemingly by mere whim on her part, when she is on the hunt for them, the rabbits scamper off affrightedly enough, but far more often they feed and play up to within a few feet of the earth, and take merely the interest of inquisitive neighbours as she passes along between them and the hedge, their refuge, in search of more fancied morsels. Rabbit is

undoubtedly the staple food of our hill-foxes. But they are almost always ready for a change from it, and our own vixen seems to have sworn to bring up her family entirely on fowls. If she fails to get anything better in a night's hunting she probably comes down to rabbit. One writer has said that in the early morning, when the fox is returning from what may be an unsuccessful hunt, the rabbits reverse their usual behaviour by giving her the widest of possible berths. Even if she has done well during the night, she is at this time overwhelmed with a sense of the length of the following day, and stocks her larder, if she can easily do so, as if for a week's siege.

We did not see our little foxes till they were six weeks old. The quiet of a June evening was on the field ; the sun had scarcely dipped below the horizon, and was flooding half the sky with the picture of a crimson shore veined with pale green pools. We saw but the purple-golden glow of it, cut into filigree by the gaps in the foliage of a small ash grove, before we turned from it to watch the little mound beneath the rocks where our foxes were to play. The long arches of a bramble were dotted with pink rose-buds among its festoon of fresh summer leafage, and the deep mowing-grass was full of campion, buttercup, purple vetch, and sweet-smelling orchis. We were not too near our foxes' den, for a strong pair of field-glasses would bring it near enough for us to watch closely without too much necessity for keeping still. A big white moth came lumbering along the grass tops, and we turned the eyes to watch its course up the hill. While we looked the night-jar began its churr on the lower note, and, before it changed to the higher, our

eyes had swung back to the earth we had come to watch. In those few moments the vixen had appeared out of the unknown, had called at the mouth of her den, the cubs had come tumbling out, and were now nozzling her from both sides in the ecstasy of reunion after a day's solitude. We soon had them under the lens, which brought them so near that when the vixen happened to look our way we marvelled at not seeing recognition in her eyes and a swift departure of her and her family.

There were four of the little foxes, now as large as rabbits. They were fat and woolly, uncertain upon their feet, and with solemn faces that seemed to wonder at the friskiness of the bodies to which they had become attached. Certainly those bodies were full of play. Sometimes they ran against one another and sent one another sprawling, sometimes they chased one another till the watchful mother brought them back to bounds with a call so low that we failed to hear it a hundred yards away. Sometimes these odd little bodies stood up on hind-legs and grasped one another like wrestlers. Once, all four wrestled together and fell in a heap, with sprawling legs that seemed to amount to a score instead of sixteen, as should have been the case. And while they played a fond mother watched over their safety, little dreaming that they were all being watched by a hated upright animal, who, had he been armed and ill-disposed, would have had them all at his mercy.

We have seen our little foxes many times since that evening. We know the four of them one from the other—the big brother who takes care of the others in their mother's absence; the thin cub with a strong

tendency to break bounds and go off exploring on his own account ; the only one that has the temerity sometimes to treat his mother as a playfellow, and whom we have seen corrected not once but several times ; the fat one that spends a good deal of his playtime in digging up bits of food that the vixen had buried for to-morrow's meal. Once we met two of them out for a run with the vixen nearly half a mile from home. They were the big brother and the explorer. We have reason to believe that the latter got into trouble when he reached home for not having kept close enough when they all ran from the two-legged monster.

Little foxes, we cannot make out why we put up with your presence on the farm. We have better cause than the rabbits for objecting to your company. Ever since your birth the mortality of the poultry-yard has been progressively pursuing the birth-rate. There is a score of seventeen grown fowls, and chickens of which count has been lost, against the gambols with which you tear them to pieces on the mound beneath the hill. There is no bill to be handed to the hunt committee. We do not recognise that our little foxes belong to them, nor do we long to see the pack streaming after your tell-tale scent. The bill, little foxes, is yours, and heaven knows why it should have been allowed to run so long.

THE VALIANT WASP

THE sun shines as it scarcely has done since Easter, making a visible incense of heat ripple up from the whole garden, sending the swallows almost out of sight in quest of their prey, causing certain vegetation to crack audibly as it is twisted or strained by the unwonted temperature. But the sharp "snip, snip" that comes from the wooden frame of the cucumber-bed is neither the complaint of an overstrained twig nor the crackling of a crane's-bill pod discharging its seed. A wasp, brilliant in new black-and-gold, is there, biting the fibre into short lengths to make communal paper for the extension of the nest.

The social ground-wasps of our neighbourhood are of two well-marked species. One is a slender, round-bodied insect, the other flatter and shorter, its abdomen shaped like the tip of a thumb if that of the first may be said to be like the tip of a finger. A difference of habit accompanies the difference in shape, for the thumb-shaped wasp builds close under the turf, the other in a deeper hole, and the thumb-shaped wasp has a far shorter temper than the other. It will be necessary to study their respective architecture before saying more, but as far as memory goes, the thumb-shaped, shallow-building

wasp makes whiter paper, and keeps its nest rather oval than globular.

A third social wasp, as is well known, hangs its nest in a tree, but whereas in other districts a low-growing shrub is chosen, we have always found our "carpenter-wasps" building on the branch of a pear tree twenty feet and upwards from the ground. They make regrettably tempting targets, and exciting ones, too, since, after the first shot at all events, the price of a short range may be a sting. Since the days when the flung stone was to us the highest available form of artillery, the tree-hung wasp-nest has become so rare that it is years since we have seen one. According to our experience this does not seem a method of building likely to prove a successful means of propagating the species, and probably the wasps have found the same.

Not at all infrequently the queen-wasp, whose duty it is in spring to start a new community all by herself, chooses a site midway between that of the ground-wasp and the tree-wasp. We have found such experimental nests hanging on the wall side of lumber standing in a shed, and at the back of some flat object hanging on the wall like a picture. But these nests have always been discovered small, whence it may be gathered that this kind of experiment is always a failure. A friend near Chelmsford, who left her house empty for about a fortnight this spring, on her return found herself disturbed in the early morning by a deep buzzing. Afterwards she found a pretty, grey, apple-shaped object hanging to one of the window-curtains, and so far was she from connecting it with the wasp that she at first thought

that some aerial mushroom had grown there. One is tempted to wonder whether the ambitious queen had hoped to fill the whole room with the combs of her city.

We see in the garden many wasps far more elegantly shaped than any of the paper-wasps. They are all dressed in the family colours of black and yellow, and all have the family predilection for the flesh of other creatures. Whether we are to regard the social wasps as in advance of the solitary wasps, or vice versa, will furnish a good moot subject for the communist and individualist to argue out. We would state the degrees of waspdom on the supposition that progress is from the solitary to the social. The solitary wasps have not yet learned the art of paper-making. They dig, however, more skilfully than the ground-wasp, drilling exquisitely accurate tunnels in which they store the provender of the future grub. Others bore in wood tinier galleries to fit their tinier bodies, and stuff each cell with nearly a score of gnats. But the best of them all, a creature with exquisitely thin gold bands upon a shiny black body, brings nicely mixed mortar, with which she builds on the side of the house a very effective weather-proof wigwam. Within, this is divided into three or four rooms, and each room is stored with six green caterpillars or more. When the mother-wasp has gone her egg hatches out, and the grub eats the caterpillars alive. They have been stung into quiescence but not death by the careful mother.

Here is exquisite care for one's unborn progeny whom one is not to see. It far transcends the instinctive forethought of the butterfly, which merely

seeks out the food-plant on which its presumably forgotten larval days were spent, and so places the eggs in the midst of the only suitable food for the caterpillars. But higher still is the desire to see one's children, and make babies of them by actively tending them after their birth. That "noble wasp," *Monedula punctata*, described by Mr. Hudson in "The Naturalist in La Plata," advances a step in this direction by capturing fresh flies and taking them to its grub day by day till it grows up and spins its cocoon. But the gap is great between even this domestic insect and the species represented by our pulp-gatherer on the cucumber-frame.

In spite of a cold winter, queen-wasps have been uncommonly numerous this year. We have found and opened several nests, from the size of a cherry up to that of a tennis-ball, and larger. The tiny family of half a dozen grubs has grown to a village, and the village to a town, with a population that makes observation rather perilous. Besides, we like best to watch the big and fussy queen training her fierce jaws to stuff food into the tender jaws of her soft, white progeny. The grubs seem to know her hum, and crane their necks (if they can be said to have necks) at her approach. We can imagine them to be calling out like young birds. It is impossible without analysis to identify the food that is being given, so finely has it been masticated before being "exhibited," but we are not inclined to take the dictum of some writers who say that the diet changes from sweets to flesh as the grubs grow. Sweets seem to be the luxury of the grown wasp. It is when they are hunting flies or caterpillars that the spoil is

taken straight back to the nest where the grubs await their food. Moreover, the wasp's opportunities of getting fruit or sugar in the early summer are slight.

The labours of the queen are soon lightened by the birth of the first brood. The new daughters stay at home for a day or two, and probably pulp the food that the mother still brings in from outside. Certainly there seems to be a division of labour of this kind when the wasps of the year are carrying on the whole work of the city except the queen's function of laying eggs. The little paper ball that the queen built all by herself has been for the most part pulled apart and reconstructed. The outer wrapping of the nest is parti-coloured in streaks according to the individual taste of succeeding artisans. Here is a strip of green made from the living bark, there a dirty buff from the decayed heart of a willow, between them some whiter paper that a more ambitious wasp has chewed with greater difficulty from sound timber. We remember a nest that was mostly mahogany colour, being made from a piece of cedar that the wasps found in right condition for their handicraft.

The need for an enlargement having arisen, some thoughtful wasp has turned navvy, and the others, seeing what a good work had been begun, have followed its lead. Then the paper-makers are the busiest section till the globe has been enlarged to fit the increased cavity. Very rarely, usually after extreme persecution, wasps leaving the nest may be seen carrying grubs of their own kind. No operation would be better worth watching than one of these

removals of an entire city, but, even if the new site could be found, the wasps, under the circumstances, would be in a mood not favourable for observation. On the whole, it is quite comforting to perceive what a large field is yet open for those who find their pleasure in studying the valiant wasp.

TREACLING

THE joys of the acquisitive entomologist are many. There is the chance meeting with some rare specimens, when no other receptacle is handy but the tall hat, by no means an unlikely event when we remember that the lepidoptera alone number over two thousand species. There is the fierce pursuit of some active and straight-flying kind over difficult and dangerous country of bog or moorland. There is the careful preservation of growing larvæ through the innumerable dangers that beset the scarcer kinds, and the joy of beholding one morning in the breeding-cage a specimen more perfect than can ever be hoped for under natural conditions. There are sallowing, beating, pill-boxing at high noon, gleaning round the street lamp, or trapping by means of arranged lights. Last in order of naming, but first in general affection, is treacling.

The butterflies of a neighbourhood, however rare, cannot long escape notice. The hours of their appearance are hours of daylight, and their manner of enjoying them is far from unobtrusive. Except in the season of such conspicuous night-flyers as the ghost-moth, the butterflies seem far more numerous than the moths, and the wonder of him who looks into a cabinet is how such legions of the latter can

have been secured. There is an air of magic about a well-attended treacle-feast that savours of the calling of spirits from the "vasty deep." The woods that might have been thought mothless are filled with a soft-winged, fire-eyed host so intent on their spread that we can take what toll we will of their numbers, sparing and destroying according to the needs of the cabinet, or the freshness or otherwise of the victim's plumage.

As trout have to be educated into a taste for the artificial fly, so moths have to be gradually sophisticated into a taste for rum and molasses. We have "sugared" very promising haunts on a perfect night without attracting any but the commonest species. On the other hand, three plum trees in a tiny suburban garden, where the treacle-jar is an established institution, have yielded night after night in July and August a succession of moths running into dozens of species, some of them unrepresented in many a pretentious collection. As there are hundreds of parishes in Great Britain where the treacle has never been smeared, it is probable that a little perseverance in this direction would result in some notable extensions of the British list.

Butterflies, except the dusk-loving meadow-brown, have folded their wings for the night when we begin to smear the alluring and slightly intoxicating liquid on the first tree at the edge of the wood. Farther in, where the foliage obstructs the level glow of the western sky, the wood is almost dark, and the croaking night-jar has already awakened to its night of activity. The weather is ideal for our purpose, an overcast sky making the night both warm and dark, and only

158 THE ROLL OF THE SEASONS

breeze enough stirring to advertise through the trees our deceptive banquet. We lay the snares in a circle of nearly a mile in circumference, first striking through the thicker part of the wood, then keeping mostly on the outskirt till our starting-place is reached. There is no need to hurry, and we fully enjoy the beauty of late evening as we silently pass from tree to tree. A robin accompanies us for some hundreds of yards, and we wonder whether he will be the first to profit from our proceedings by snapping up some spider or other creature that the "sugar" disturbs by its trickle in the cracks of the bark or allures from its seat at the base of the trunk. As for the squirrel, who also takes very particular note of our unusual action, it is fairly certain that he will investigate our work before we are fairly out of sight. It is of course certain that dozens of other inhabitants are aware of our presence, but conceal their own from us. Here, for instance, is a chance for the honey-loving mouse to taste a new delight without our being a whit the wiser.

On the first round we scarcely saw a moth—a carpet or two that we disturbed while brushing through the bushes, one or two pugs at rest on the grey oak trunks, an early yellow underwing buzzing round an ivied elm, and few, if any, more. We start again when the treacle has been on the first tree for nearly an hour. Half a dozen fat-bodied moths are careering round the attractive centre, and one more greedy than the rest is licking up the syrup with its long and eager tongue, its large eyes glaring like live coals and its wings so quivering with ecstasy that we can scarcely make out the insignia of its species.

And here is black arches, not very common in this country, but one of the chief pests of some Continental lands—the “*Monacha* butterfly,” as it was recently called in one of our dailies when the news of special ravage by its caterpillar came from Germany.

We are soon in the thick of our work, the “pill-box” or killing-bottle being in constant requirement as one desirable beauty after another is recognised in the feeding throng. In the soft setting of night our moths glow with a beauty as complete and as varied as the gaudiest butterflies on bright flowers in the sunshine. Indeed, if the exquisitely pencilled moth and the gayest of the butterflies, such as small copper or red admiral, met side by side on the midnight treacle, it is by no means the moth that would be outshone. The purple and orange of the herald, though they be but moth-purple and moth-orange, must furnish a robe of high brilliance as seen by the people of the dark. The glistening, jewel-like point on the fore-wing is not equalled by the inlaid mother-of-pearl of the fritillaries or by the best sheen of the hair-streaks. The peach-blossom is another moth out of many whose appearance at the treacle could never fail, however frequently it might happen, to gratify the heart of him who has spread the feast.

We should need to acquire the nocturnal eye in order to appreciate half the undoubted beauty that attends our banquet in the wood. Broadly smudged with every shade of pretty grey, brown, yellow; shaded to a nicety so that each light bar is admirably thrown up and often made to represent an embossed pattern; boldly inscribed with figure-of-eight, heart and dart, dagger or Greek letter,—they offer repeated

problems to the evolutionist that the formula "sexual selection" seems incapable of solving. Beautiful as are the tints, and clear and uniform as are the patterns, we cannot imagine, for instance, the male yellow under-wing submitting his charms to the consort he is wooing, and challenging his rivals to the game of simulating a shooting star. The insect mind does not seem equal to such a feat of deliberation as this would imply in the female.

On the other hand, protective as are in hundreds of instances the upper wings of our moths, which are alone seen when the insect is at rest, the gorgeous colours that they show when the lower wing is uncovered seem to serve no useful purpose. The crimson under-wing is a gorgeous sight when displaying with apparent care its brilliant flight-colours in some sun-speckled wood, and the suddenness with which it disappears on alighting is admirable to the human spectator. But that surely is not sufficient "consideration" to warrant nature in producing such brilliance and such antics. When we find the shorn-off wings of many victims beneath the place where the bat has hooked himself to devour their bodies, we very rarely find hind-wings that are not conspicuously light by comparison with those that cover them when the moth is at rest. On the other hand, we have seen a bat chase an old lady, a large and uniformly sombre moth, for minutes together without success. It seems, then, that the gaiety of our butterflies of the night is a distinct disadvantage in this important respect. It is nothing compared to that of wearing equally conspicuous colours when at rest by day under the inquisitive eyes of the tits and other hostile birds.

THE CUCKOO HABIT

THE silence of a May afternoon is slightly ruffled by a series of little coughs like the whisper of a locomotive, as a shadow-grey bird slants down through the ash boughs and comes to rest on a green bank. It sits still for a few moments, turns once, then rises again and makes for a little crest where the grass grows long and dry in little brow-like dashes. A passing inspection is made as though the thought had occurred that something edible might be there, and the pointed grey wings are spread once more and the hawk-like bird passes from sight. Thus neatly and silently must the parasite do her work. Bungling or hesitation is fatal; smoothness approaching self-effacement the whole stock-in-trade of those who wish to impose on the carelessness or good nature of others. Like a perfectly oiled and mathematically adjusted machine the hen-cuckoo has done her work, and the tit-lark's nest now contains that which will rob it of its other treasures and make exacting work for a pair of tiny foster-parents of a monstrous chick.

The life-history of the young cuckoo has been abundantly described since the time when Jenner professed to have witnessed it, confessing later that

he had relied on the testimony of a paid watcher. The watcher, however, was a good observer. We have now, from several naturalists, photographs of the blind, hollow-backed nestling stooping beneath eggs or fellow-chicks and heaving them from the nest, panting terribly between the instalments of its horrible task, but persisting till it has the whole nursery to itself. Not only the photographers, but many casual observers have seen the wretched foster-parents feeding their monstrous charge, often having to perch upon its shoulders to reach its mouth, and so pecked by its impatient ingratitude as to be bald. Often the work wears them to death, and if this occurs before the maturity of the cuckoo, its plaintive baby-cry fetches to it new nurses who undertake to feed it though the incubus has not grown upon them out of a strange mishap to a clutch of their own beautiful eggs.

Beyond the grand question, how the cuckoo habit ever came to be contracted, there is one notable link in the bird's life-history still rather dim. In what way is its hawk-like appearance useful to it? Is it true that the process of introducing the egg into the nest is preceded by a taunting visit from the cock, so that the small birds absent themselves from the nest in order to chase a supposed hawk from the neighbourhood? And is there to the senses of birds some subtle difference by virtue of which the hen is less hawk-like, and so more tolerable to her intended dupes? That, at any rate, is the line of development taken by the Indian koel, the male of which resembles a crow, while the female is a poor, drab, inoffensive-looking bird which slips quietly up to the nest while

the dangerous-looking mate is being chased away. Other Indian cuckoos, on the other hand, succeed by virtue of their exact resemblance to the destined host, a resemblance that can never aid our only practitioner of the foisting art.

If the impish human experimenter tries the effect of putting canaries' eggs into chaffinches' nests and of exchanging the eggs of robins and wagtails, he fails in a large proportion of cases to secure adoption, while the cuckoo hardly ever fails. Every parish has its one or two chanters of the familiar and typical spring song, and few districts have more than the average share, though Sir Herbert Maxwell's sister has counted as many as fourteen at once feeding on currant-moth caterpillars in her Renfrewshire garden. The wonder is, not that there are so many cuckoos, but that there are not many more. If the bird lays only the five eggs of the average small bird, she has a five times better chance than any one of them of bringing four of them up. She must, in order to succeed, show not the least solicitude for the welfare of her progeny and no cuckoo has been known to wreck the scheme by paying furtive visits to see whether the egg is still in the nest, or whether the chick has duly ejected its foster-sisters. In some books the story is vaguely told that once a pair of cuckoos built a nest in England and reared their own progeny. We do not believe that such a thing occurred within the period of human history. Long before man appeared on the planet the cuckoo habit was perfected and sealed by complete callousness, and the way of return to an honester mode of life seems to be barred beyond hope. The cuckoo that took suddenly to house-

keeping would make a hopeless failure of her incubation or the feeding of her progeny, and would at every stage run a far greater risk than her much-experienced neighbours of falling in the clutch of the crow, the hawk, and innumerable other dangers. Meanwhile, the rival of her own species would have her five children, heirs to the vitality acquired in an irresponsible life of vagabondage, safely boarded out with capable nurses, who could be relied upon to bring them safely up even at the cost of their own lives. And as there is evidently no half-way house between full maternity and parasitism, the cuckoos seem destined to remain cuckoos to the end of time.

The descent into cuckoodom can be shown to be just as easy as ascent out of it is difficult. Every season some one or another comes across an instance of laxness in the nesting arrangement of some bird that seems to point in this dangerous direction. It behoves every bird to maintain jealously the pride of individualism, to insist on making its own nest in its own place, building it in the time-honoured way, and guarding and maintaining it as its very own. Pheasants and partridges are the worst offenders against this ideal in this country and at the present time. It is comparatively common to find a pheasant and a partridge laying their eggs in the same nest, or a French and English partridge taking this bad reading of the *entente cordiale*. The subsequent history of such experiments varies. More often the two birds sit side by side, each hatching half the combined clutch. Sometimes the birds fight for the nest, and one of them is driven away, not only from the other's eggs but from its own also.

Perhaps the original cuckoo thought to steal a march on some other bird by appropriating the nest that had been built, with the intention of rearing her own offspring therein. Then the rightful owner drove her off and hatched the cuckoo's egg as well as her own, not to her own chagrin, but that of the cuckoo. Those fond of strange speculations may consider the alternative theory—namely, that some other bird stole the nest of the cuckoo, who has been trying to get her own back ever since. We cannot ourselves entertain the suggestion. The cuckoo must have been the prime offender against avine morality. Is there any excuse for her? We find to-day that not only is the anatomy of her breast little fitted to the duties of incubation, but she is almost unique among English birds in the shape of her feet, two claws of which turn backward instead of the usual one. That may be an impediment to the craft of nest-building, though it must be remembered that the parrots, and our own woodpeckers, with similar feet make very good use of them. The zygodactylic feet may be an inheritance from more honest days; they may be the result of the young cuckoo's straining for full possession of the nest, and useful tools for that diabolic proceeding; they may be only intended as a means for making the gamekeeper look thoroughly foolish when he has shot a cuckoo in mistake for a sparrow-hawk.

BUTTERFLIES

THE ordinary person is not disposed to take the butterfly seriously. We do not even take the trouble to keep its name pure, for one day no doubt it was boffle or baffle or bother fly, a flyer that seems to have no definite aim, but is blown hither and thither, much as a dead leaf is baffled by the wind. If that is the origin of the name, it is so thoroughly lost that now no dictionary even mentions it. So much does the insect resemble a caterpillar with wings that the ancients decided that first came the butterfly, which then shed its wings and became a caterpillar. The ancients made ludicrous mistakes about other creatures, but none quite so contemptuous as this.

There are, we know, butterflies with character—peacocks that will come again and again to the flower we would drive them from, emperors that guard the upper regions of air like eagles, Camberwell beauties that wrestle on high like gladiators, and sweep from point to point without a superfluous wing-stroke. But they always astonish us as abnormalities. They do not suffice to alter our opinion of the average butterfly as a senseless, meandering, scarcely self-conscious thing.

The painted butterfly! Far less often do we

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speaking of the painted bird. The butterfly, we imagine, is thought to have "just growed" painted, as Topsy falsely alleged was the fact concerning herself. He is a bold man who will maintain that the beauty of the butterfly is the result of infinite selection on the part of the wooers and the wooed. On the other hand, except in a few, though well-known, instances, their gaudy colours cannot be attributed to natural selection, because they are not founded on utility. Natural selection has determined the shape and colour of many remarkably inconspicuous caterpillars, and has taught the butterfly to keep its bright colours on one side of the wing, its neutral tints and leaf-like markings on the other. But has it made some butterflies bright blue, some yellow, some coppery red, some white, others black, and many brilliantly chequered?

A caterpillar common on stinging-nettles just now is an indistinct mottle of yellowish brown and black, and is covered with make-believe prickles almost as deterrent as the stings of its food-plant. In a week it will throw off its prickly armour and become a soft green, legless creature, no longer with the constitution of a caterpillar, every particle and atom, as well as every cell, in a state of flux resembling annihilation. Then the material of the disintegrated caterpillar recrystallises into a radically different being—no grub, but a flying rainbow, every grain of murky colour changed for a radiant jewel, the soft trash of the skinned caterpillar moulded into new and more wonderful hairs, armour, a coiled trunk that is a marvel of construction, two great eyes, each composed of thousands of facets.

We all change, of course. Every cell in the human body will have been changed for another cell within a certain number of years. But that is nothing compared with the changing of every cell simultaneously into something as widely different as the mandible of a caterpillar and the proboscis of a butterfly. Memory, as we conceive it, would be powerless to bridge such a revolution as that. Has the butterfly, then, forgotten that it was ever a caterpillar? Of course. Then how is it that, having sated its new-found appetite for nectar, the most delicate product of nature's alchemy, it repairs to the nectarless, repellent nettle, and there lays the eggs that shall become other caterpillars of its kind? And how, if it happens to be of so slightly varied a colouring that none but a trained naturalist can formulate the difference, it takes its eggs not to the nettle but to the elm?

These and other biological problems are too heavy for the hot summer days when the butterflies are gambolling. In the wood the fritillaries tower upward, gyrating till three of them seem to be certainly four, while four fill the whole sky with revolving pearl and amber. On the hillside, where blue-and-purple viper's bugloss is beginning to blossom, still bluer and still more purple butterflies open and tumble, then close and become triangles of silver exquisitely pencilled with tiny circles in many quiet colours. The meadow-browns display rosy cheeks on their wings, with sparkling eyes set therein that we can never persuade ourselves cannot see us as we creep up to them. How many butterflies there are in our short British list whose colour has run to eyes!

The peacock that has them in the same brilliant design as the bird, his namesake, is perhaps the most remarkable, while his congeners, the tortoise-shells, the red admiral, and others, seem to have been interrupted when they had no more than sketched out the same adornment. Then the wood-argus, the wall, the large and small heaths, the yellows, the whites, the swallow-tail, some more and some less, are also marked with sham eyes. Perhaps this is the one useful marking that natural selection has fixed upon in the case of the butterflies. Nothing is more disconcerting to a bird, for example, than to see an eye suddenly glaring from an unexpected place. The boldest bird hesitates long before it will go to its nest under the stare of a photographic lens. Possibly the same bird would flee in dismay should a contemplated morsel open two shining eyes, even at the corners of its wings. One or two of the moths have eyes also, but usually, like the eyed hawk, on the hind-wings. Defenceless caterpillardom may sometimes be saved by the same device. Our favourite of all these grubs is that of the puss-moth, and we think that nothing in its triple armoury of terrifying appearance is so powerful as the two spots above its red-bordered face, that look just like very malignant eyes.

But the butterfly is entirely delightful. It has no need of safety other than its wings. The "eye" of a meadow-brown has no terrors, at any rate for the child, and causes no anxiety but lest it should see the captor approaching and convey the prize out of reach. The chase of the butterfly is a rural pursuit that never palls, though its excitements are far out-

done when some forlorn cabbage-white strays from Covent Garden market into the dim courts of Drury Lane. Then is every small bonnet doffed, thin legs are agitated, feeble lungs raise the view-halloo, and the hunt goes streaming down the street headed by the flapping, bothering fly that, seeming to be quite unaware of its danger, yet manages to top some wall just before the leading huntsman would grab it.

The white butterfly is usually one's first prize. Those that are coloured imaginative youth calls "French." It is long before we discover that both white and coloured are of several sorts. We have said that the pursuit of the butterfly never palls. As the schoolboy grows up he learns other methods of bringing down the same quarry. A chip-box is as good as a butterfly-net on a dull day. Chrysalids can be picked up that will yield perfect specimens of uncatchable insects. The breeding from caterpillars unravels, or rather reveals, some of the mysteries of butterfly life. But, last as well as first, the ideal way of coming by a rare and coveted specimen is to run it down in fair chase. We say it who have experienced it. But now we prefer to watch the towering fritillaries and wonder whether they are really three or four.

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THE KITCHEN GARDEN

THE flower garden touches the house and belongs to the house. The carpets are reproduced in its lawns bordered with geranium and calceolaria, the wall-papers in its tall hollyhocks and sunflowers, larkspur and œnothera, poker plant and golden rod. The arboretum is like a Roman triumph in which all the denizens of the empire have been collected together to do honour to their conqueror. If we want the true temple of Flora we must enter the rose garden. Here, as in other temples, only one attribute of the thing to be worshipped is singled out and placed on high, but at least the roses are thoroughly honoured. The ideal wild garden has no borders; if man arranges it he must at any rate appear not to have done so. In the kitchen garden man frankly sets nature at work for his own ends. We feel when we enter it much as we should if we asked the dairymaid among her milk-pans to help us wile an idle hour. Idleness in the flower garden has no piquancy; while, for some reason that we are too lazy to pursue further, the kitchen garden seems crammed full of idleness. A tall brick wall of the warmest, softest red that the old brick-makers ever baked shuts out the wild world.

It is said that the bell of the snowdrop encloses air two degrees warmer than that outside. If a little sun shines, our kitchen garden, even in January, sometimes feels like the Garden of Eden. To-day, with the bees at eager commerce among the lavender blooms, with the gorgeous butterflies sailing among the artichoke blooms, with plums, peaches, and apples glowing in the last ecstasy of colour, the air, albeit, just laced with the tonic of September, the walled garden seems the whole world and the hour of noon the whole twenty-four hours. It is indeed the Garden of Eden regained by generations of human industry. We are back again not only in the place but in the days when we bottled the bees at work in the foxgloves, or watched those wonderfully courageous little spiders attack even the wasps that got entangled in their net. And as it seems, the same fly-catcher inhabiting the same branch of the jargonelle permits us to take pleasure in her work.

The kitchen garden is far older than the flower garden, even than the happy, perennial flower garden that our great-grandfathers loved. The first flowers were planted here as thank-offerings for the more substantial benefits received, and many of them remain here to this day. At the same time, our kitchen garden is far older than most of the vegetables it now officially contains. Every schoolboy knows what is the age of the British potato. At the time when its first tubers were propagating in England, carrots and onions and "sallets of herbs" were being imported from the Continent for royal and other wealthy tables. It is true that Piers Ploughman, or, at any rate, his master, could eat parsley and leeks and cabbage about

two centuries earlier, but if the cult of vegetables had not died out in England by the time of Elizabeth, it had, at any rate, fallen far behind that of Holland. We are even reminded, as we pass the feathery carrots and come to the next bed, that the best parsnip we grow to-day is from stock that grew wild in the fields less than twenty years ago.

Our kitchen garden gives many evidences of its antiquity in the "weeds" that spring up here in spite of the sternest cultivation. The commonest and most persistent reminder of our ingratitude in calling it a weed is a tallish green-flowered plant with heart-shaped leaves, the under sides of which seem to have been rubbed with soap. It is *Chenopodium bonus-henricus*, Good King Henry, All-good, Fat-hen—lastly wild spinach. Some curious people and a faithful cottager or two eat it now. To our ancestors who knew simples better it was one of the best of green-stuffs obtainable, and we do not doubt that in this old garden it was once thoroughly welcome in the beds whence now we chase it with the proverbially vain "furca." "Simple" we have called it. Let any one reflect for a moment, and he will realise that for thousands of years the vegetable has been at most but the garnish or the medicinal corrective of the joint. So deep-rooted is this feeling that we regard even the fat parsnip or the bean, which the analyst tells us contains far more food than the meat, as merely an adjunct. Take away all the vegetables and we can still dine on the joint, but take away the joint and we are lost. That attitude is being rapidly beaten down by the vegetarians, and we may have to take up its exact opposite. But before the advent of the heavy

vegetables, it may be said that the cabbage was scarcely more important to the sirloin or griskin than the mint is to-day to the green peas or new potatoes. That is to say, vegetables were unimportant from the food point of view. We took them as the cat and dog take couch-grass as medicines, and so badly did our staple food of meat serve us, that as time went on we cultivated in this kitchen garden of ours a vast number of herbs that we never hear spoken of to-day.

The sweetest of them have survived with the flowers. We all know lavender, marjoram, thyme, sage, mint ; many of us rosemary, hyssop, sweet-basil, borage, dill. But where are alecost, clary, dittander, fenugreek, lovage, skirrets, smallage, and a hundred others that were once deemed essential to the happiness of every housewife. We can find no trace of them. Long ago their places were required, and none of them are of stalwart fibre enough to live as guerillas with the spade and hoe always against them. But there is a certain other sinister family that has taken its dismissal by no means so tamely. Let us test the significance of their names even in their Latin guise. *Atropa belladonna*, *Hyoscyamus niger*, *Solanum*, *Datura*. They still signify something because, being among the most potent of the old herbs, they are still notorious in the pharmacopœia. Deadly-nightshade has gone. Such outspoken villainy could not be expected to escape the attentions of a hostile gardener. But sometimes even now its woody friend, the bitter-sweet, climbs up the roots of a peach tree and manages to set its tomato-like fruit, and the expeditious black nightshade rears its tiny tree in the rich soil between diggings, ripens its berries, and

meets the hoe smiling. The great henbane is regarded to-day as a curiosity, but there must have been other gardeners who tried in vain to eradicate it perhaps in a less tidy and more overgrown garden. For the past twenty years no partiality has been shown for the thorn-apple, a leaf from which cured, let us hope, the asthma of some medieval monk. Twenty, nay, thirty years ago, we remember, a solitary thorn-apple came up, spread its cucumber-like blossom, and matured its prickly burr. We have scarcely known the garden since, but here again is the solitary annual plant, its burr open and grinning with black seeds about to fall. Let us leave the mandrake, still rambling here, the aconite promoted to the flower garden, and others, and return to pleasanter subjects. The black art of those who founded this garden will not bear dwelling on. Some of those stories poured into the ears of avaricious Henry may have been true.

THE WATER OF THE MOORS

THE romance of water is little known to him who draws it from the housewall by turning a tap. It is the spirit of a leaden pipe twenty yards long and of iron pipes perhaps twenty miles long, all the brightness of an earlier origin strait-waistcoated out of it. All that can be said for it is that it is good enough for the strait-waistcoated people who compel it from its labyrinth in the depths of a town. Not good enough for us when we come from the tent with bare feet on the dew-drenched grass and ask for water for the breakfast coffee. We dip the can from the torrent gushing between rocks that its impetuosity can wear no deeper than a chance impurity may cling. Then we lay it aside and take our morning dip in the pool from which it gushes, scaring the minnows and the trout with our happy floundering. Now, see the miracles that happen in this moorland water when it is upon the fire. For miles it has burbled and chattered in rocky waterfalls and cascades, sweeping here, tumbling there, resting at whiles, but fully making up for delays by later impetuosity. You can see or divine at sight that its history has been free and happy, but only when the fire quickens under the pot can you fully realise how much air it has gathered in its frolicsome career. The

camp-kettle that we filled with water is full of great pearls, which even become diamonds as they sway and break, flattening and sparkling with almost coloured fire as they dance upward and vanish from their aqueous prison. Don't tell us that the boiling undoes all the tumbling of the trout stream. We have seen those pearls, and by so much the more relish our tea beyond that infused from the spray of a leaden pipe.

The trout, if not the best of all fish, is in every way far superior to those that inhabit even the swift-flowing, deeper, and less joyous waters. They are "coarse fish," while our trout are game—game by virtue of their better table qualities, and game in their love of life and the determination with which they fight for it. The better the water, the better the fish. How does John Ridd (in whose stream we will fish after breakfast) dwell on the delicacy of pickled loaches? We have not tasted them, but we are ready to believe that these tiny fish are excellent. They belong to the joyous stream. It brings them abundant oxygen even beneath the stones which they are bound to use as protection from the trout. When we turn them out, delicate and bearded, they remain a while almost invisible by their similarity to the bed of the stream, then dart to shelter of another stone. Here, also, are the game little bull-heads, capable of choking the grebe or kingfisher that should dare to swallow them, and worthy of a chapter all to themselves.

The insect life of our trout stream is beyond that of all the moors and all the forests through which it flows. Nine out of ten of all the dancing myriads of flies own the water as their birthplace. The stones

are coated with little houses slated with chips about the size of these letters, most knowingly cemented together. Others, like the well-known caddis, have shins or overcoats of stick or stone, which give them the advantage of armour without the inconvenience of a fixed abiding-place. Every day the stream gives up a fresh horde of specifically new insects to dance in the sun and then return to feed the trout. All our dragon-flies, from the indigo-green or bronze-winged drakes and feeble demoiselles to the great whizzing "horse-stinger," come from the water. We catch the biggest of them all, and find that a fat fly between his jaws was the absorbing event that permitted us to steal a march on him. He is so rapt in its juiciness that he mumbles it between our fingers till it is all gone. But if you give this great dragon-fly warning of your intention to catch him, you can have no warier antagonist. He measures to a nicety the length of your butterfly-net, and seems to delight in letting you get almost within striking distance, and in dashing to and fro just beyond its sphere of influence.

But where is water for heather and whortle-berries these brazen days? Before the sun has mounted halfway the sky is pitiless blue. At times, some taunting, unreachable argosy sails along on some errand entirely unconnected with our wants. Most promising young thunder-clouds, rolled into crisp billows that speak of electrical restraint, show their backs above the hills, then revolve out of sight like some marine monster that has been up for a breather and gone back to its own world. But the heat of the world, whether physical or mental, is not diminished by such dreams of cool showers. Most life has fled from the moors. The

crows looks over them for such cripples as may not have been able to remove, and migratory bands of doves take berries there as they roam on towards the sea. Long, widening green seams proclaim the more or less perennial watercourses, for here only trees are equal to the task of growing. These combs are perfect oases in a sun-scorched desert, and they contain all that roams the moors on cool nights or at damper seasons of the year. Here the blackcock crows his thanks for a green and tranquil life; the red stag couches out of sight of man and almost out of scent of flies; the half-wild ponies climb like monkeys down to water that is deep enough to cover their fetlocks, and there stand swishing their tails and waiting for the cool of the evening.

Out of that brazen sky, that dry air that extracts pounds of moisture from the pores if we only sit and pant in it, there falls at night a copious dew. Long before daylight fades the grass glistens with it, our last perambulation of the tent to see if the ropes are tight is a cold-water paddle, and as we lie in bed, we like to stretch out the arms and feel that the blessed water is really in the air. Now the argosies are thickening in the sky, and the wind that passes through the trees seems to be asking whether they are ready for rain. Their response is a cheering intimation that rain will come. It comes in the middle of the night, pattering on our woven roof with welcome vehemence. The big spots, well driven by a forty-mile wind, send each a tiny spray through that kisses the face like dew. Bell after bell is added to the chime of the brook that before morning speaks with a hundred tongues to the two-noted tingle that

was its message yesterday. The bog that never runs dry has been overcharged and is sending down the surplus like any pool. The combes are running, from the last outpost mountain-ash. The bracken roots cannot cope with what they have received, and the improvident heather is shooting off the water it has been longing for. The caddis-grubs have to fight for it in a torrent that rolls stones as big as cricket-balls. Loaches and bull-heads are unhoused, and must thank their lucky stars that the clear water of their stream is turned thick brown. No less grateful are we for this slight circumstance that puts us on equal terms with the trout. We have waited many days for the rain, and it has come at last.

THE INFINITE SEA

GEOGRAPHICALLY, of course, the sea is not infinite. Its moods, however, are demonstrably endless. If each tide were to take exactly twelve hours to rise to the flood and sob back to the ebb, a great part of the sea's changeableness would be lost. But missing coincidence with the sun's movement by twenty minutes, there must be thirty-six tides, eighteen full days before to-day's full tide will be repeated, by which time the days will be so appreciably shorter that, though clock time is kept, sun time will still be missed, while the varying height and speed of the tide during the sway of one moon is another factor that seems to postpone for ever the recurrence of a particular ocean scene. To these regular variants add the altogether incalculable changes of wind, cloud, sunshine, rain, mist, and atmospheric texture, and we have a complexity of variability that makes even a mile of sea-coast an endless panorama of surprise.

It is our delight this holiday-time to have a portion of the sea continually under gaze—to sleep with the sound of its angry or placid goings and comings in our ears; to have its briny breath in the nostrils without intervention of wall or window; to fall asleep

watching it under moonlight, and awake to find it enpurpled by the early sun. Some of its night mysteries have vanished with familiarity. We know which rock it is that greets the three-quarter tide with clapping; how the sound of thunder is produced; and which wind sucks deepest at the sand, or piles it up most in the place of the morning dip. We know to an inch or two how high the tide will come, and within ten minutes or so at what time it will reach its climax. Yet the sea has not lost that air of always attempting something it may not be able to achieve, or of doubting whether to continue its retreat into the very depths.

It is the crispness of encounter between our own element and another that we can never wholly conquer that makes the edge of the sea so fascinating. On our shore that crispness is unusually accentuated by form, colour, and change of organism. At the headland a great purple scar descends sheer to the sea. The waves leap in leaden blue, flinging up their white caps which have their answer in storm-time in straight, thin streams of red water pouring from the cliff brow. This morning, when a pelting south-easter riddled our tent as with bullets of rain, the streams were flung back over the cliff edge and went towering heavenward in trees of spray. In the bend of the bay the shale and clay have slipped seaward in a medley of round steps, like the clods of snow that an avalanche produces, and the whole is clothed with luxuriant verdure right down to the sea. It is a tangle often waist-high—purple knapweed, clambering vetch, great pink-headed agrimony, rounding sharper irregularities into a softness like

that of the clouds. The waves toss their spume into this triumphant flora, silencing for a while the chirrup of the grasshopper, and driving the bee from the sea convolvulus. In the rock pools we catch the snake-like spotted gunnel, and scarcely ten yards up the green bank we have seen the slow-worm reluctantly drag away its silvery coils as we climbed over its basking-place.

We know of the vetch and knapweed and hemp agrimony because we slide and tumble through them on our way to the sea. In the middle distance they become mere velvet bosses, capable of intense brilliance when the sun strikes them fully. Then the cliffs fire with purple, the sea becomes turquoise and emerald, the sky glows like a bowl of sapphire, the whole scene is in the highest key of magnificent joy. We like to have the tide out beyond the flats for this mood. The sea loses a little of its turquoise when it is stirred with sand, and the brilliance of the deep water has a better neighbour in the flats of ironstone and shale and the miles of orange "pop-weed."

There is nothing of the monotony of sunshine this summer. Our bay is, in fact, far more often in some other mood. The wind strikes the note of rain, and soon the sky, the sea, the shore are one leaden grey. Below, the solid sea or a sea of steel; above, an atmosphere almost as effectively wet, a sort of sea in suspense. A mile or two away, upper and under wetness run together in a neutral chaos. Dazzling gulls and a few bursting waves make the most of a perfect background for their whiteness. On another day the sea just lay and brooded its next mischief or

frolic. There was not a breath of air. The water was apparently dead-still—that is, if we stood so back from the cliff edge as not to see the ripples with which it sobbed on the sand. Steamers came and went, leaving their trails of smoke, which clung to the cool mirror and stayed there in pointed heaps or crawled ever so slowly as the never-resting sea-current furtively moved in that deathly stillness.

Then dazzling white thunder-clouds moved in the far distance; anon black rolls of clouds came round the shoulder of the land, and presently the lightning leapt from sea to air, thunder crashed, the heavens were opened, and the rain descended, the cliffs streamed with water, mud, and stones, as everything seemed about to be overwhelmed with the power of the water. It was pitiable to see the little birds darting close to the earth as the deluge drove them from one shelter to the next. And now, will the thunder clear the air and settle the weather, or will it just bring round again the long procession of elemental effects that belong to an unsettled time?

This morning there is some blue sky and no rain. April clouds are scattered about like hounds strayed from yesterday's hunt. In a shiny pool about a hundred lapwings are standing, their heads all one way, and every bird doubled in the mirror. Round the northern headland comes a flock of them on the wing, thick-pinioned as no other birds are, lolloping and turning in unison, now black, now snowy white, as they turn; now glinting in a streak of sunshine; now passing beneath a cloud. Perhaps the plovers

have got tired of this summer earlier than usual, and are about to flock along the shore to their winter quarters. Perhaps they know no more of the weather than we do, and are waiting to see whether sun or cloud is to have the upper hand.

A CITY GARDEN

In the sixty-four squares of the chess-board should be taken as so many square miles, they would surely more than cover the four-mile radius but still fall short of the county of London. We should still have to add huge tracts of park and moor in order to get the ideal of the natural London that includes East and West Ham, Tottenham, Highbury, and many other dominations of business and working-men. A chess-board of a hundred and forty-four squares might give us some concept of this town, and if every white square should be made into a park or recreation-ground it would be not such a bad town to live in. As a matter of fact the four great parks of the West End would make one square green and square half-way through two others, and if we went eastward we should have to bridge very far before we came upon anything like a quarter-square park in the almost unending sea of mean and very mean

The black square nearest the middle of the board may stand for the City. A pin dipped in green ink would suffice to trace on its blackness all the trees and gardens within it—within shores both very pretentious and gardenless within it. Right in the middle of the board

A CITY GARDEN

IF the sixty-four squares of the chess-board should be taken as so many square miles, they would rather more than cover the four-mile radius but still fall short of the county of London. We should still have to add huge tracts of brick-and-mortar in order to get the idea of the actual London that includes East and West Ham, Tottenham, Enfield, and many other dormitories of business and working-men. A chess-board of a hundred and forty-four square miles would give us some concept of this town, and if every white square should be made into a park or recreation-ground, it would be not such a bad town to live in. As a matter of fact, the four great parks of the West End would about make one square green and sprawl half-way through two others, and if we went eastward we should have to trudge very far before we came upon anything like a quarter-square break in the almost unending sea of mean and very mean streets.

The black square nearest the middle of the board may stand for the City. A pin dipped in green ink would suffice to trace on its blackness all the trees and gardens within it—which shows how very precious the City garden is. Right in the middle of Cheapside

a stout-hearted plane runs its roots under the pavements and foundations and lifts its peeled branches into the sometimes sunny air. Do not despise its cracked and scabby bark. Only by throwing off in great scales its smoke-choked skin can the plane keep itself healthy in our peculiar atmosphere. And your tall tree cutting the blue sky into diamonds with translucent green is not everything. Right into this middle of Cheapside that very bird of the wild, the wood-pigeon, comes, builds its rustic nest in the branches of the plane, and feeds squeaking youngsters over the heads of the City men whose passing to and fro keeps the pavement hot. The wood-pigeon that men are lying in not very hopeful wait for now in the thick of beech woods all over wildest England! Wood-pigeon, cushat, queest, says the book, but we have heard it called quist, sometimes with a short "i," but in the purest vernacular with the vowel as open and uncompromising as in "ice." "What!" said a West countryman to a Yorkshireman he had met in the far north-west of Canada, "thee dussent know what quisteses be?" and he laughed loud and long at the limitations of some folk's knowledge. But we have seen the eye of the Yorkshireman, just as the eye of any other countryman, brighten at the sight of the wild wood-pigeon walking the rare sward and even the tiles of central London. In his "Visit to Aesculapius," Sir E. J. Poynter has painted a group of the ordinary courtyard doves, and then one portly "quist" comes floating down to join them at the feast. It may be that this wild bird among the tame was put there as a tribute to the skill of the great doctor, it may be that it just got there from a chance

group of London pigeons that caught the artist's eye. At any rate, the bird has got into an important national record, as once or twice did the kite of old, a London bird that has ceased to be.

Whether or no the Cheapside pair of pigeons are worth the whole flock of the St. Paul's pigeons hard by is a question to be fought out between the sentimentalist and the mere lover of beauty. Surely nothing is more beautiful than the wild eddying of the common domestic pigeon round this smoke-blackened and rain-washed pile! They exhibit most of the varieties caused by domestication, though scarcely any of the eccentricities of form that the breeder has grafted on the graceful wild form, and authorities say that year by year the flock more and more reverts to the ancestral uniform of the "blue rock." The swelling dome of St. Paul's is as much their own wild domain as the cliffs of Scarborough ever were, but Olympians friendlier to the mortals that crawl round its base it would be impossible to imagine.

The gardens in which bird and man meet are but the thinnest of green lines between the majesty of the cathedral and the insistent, sordid traffic of the street. At first it seems impossible to shut out the sound and the sight of the motor-'bus. It is a sight of some of the old foundations that date from beyond the great fire that performs this magic. These noble fragments, peeping hard and true from the velvet of the grass, are enough to make the least of us psychometrists. If we dared sit on one of them we should see the whole pageantry of Tudor London go by, and find Roman chariots far more credible than electrobuses

and steam trolleys. Round by the quiet of the north side, more distinctively called "the Churchyard," we can, without magic aid, forget a while the call of the City. With a book on a sun-smitten seat the junior clerk or the young lady from the fur-house can spend a better lunch hour than the most sybaritic of employers. The sparrows are the waiters, little birds of a far deeper brown than at the farm where we were born, and of infinitely greater trust in human kindness. In London the sparrow has to be skylark, nightingale, flycatcher. Throw a crumb into the air and see him flutter up and take it as neatly as a swallow does a fly. Having thrown the last crumb, hear him chirrup his grace after meat. Wait a little and see Philip, at almost any month in the year, strut his wings upon the ground and become rigid under the influence of the grand passion. Yet it is left for the artists of Japan to do justice to this most valiant of birds.

An archer could have sent his shaft from old St. Paul's towards Aldersgate Street, and let it fall into a far quieter garden, the then burial-ground of St. Botolph, now known as the Postmen's Park. Here in the midst of the noiseless industry of the parcels-office is peace indeed. The fountain in the middle has goldfish, of course, but it has more than that. A young man leans over and looks hard into its shadows, then tosses his head with a tiny air of something solved. He has identified the gloomier forms of a couple of dace, possibly the remnants of some pike-fishing expedition that a postman has put there. In this pond also are many of the really wild water-weeds. Water-plantain rears its dainty inflores-

cence, hornwort pushes in the depths, and other pond-weeds "occur" here as though they had perfect right. Most of us refrain from peering for details, and get deeper rest by sitting in the Temple of Honour and drinking in the general air. Behind us are emblazoned on tiles the names of some fifty heroes of common life, whose deeds have no other monument. Sometimes a familiar name such as that of the Stella, but for the most part just people who have stepped out of the crowd to stop a runaway horse, snatch a sister from drowning, or a tiny brother from the flames. Boys and girls of tender age have their names there, side by side with engine-drivers and a Fellow of the Royal College of Surgeons, in one splendid democracy of all ages and every class. Their good deeds stretch out hands of blessing over those seated beneath them in a half-hour's oblivion of the driving world outside.

All round this quarter-acre of peace rise the tall buildings of the General Post Office. They are packed with the parcels that some of the resters must soon go to handle, and men pass without noise up and down the iron staircases that cross the windows. From the tree overhead a few dead leaves come slowly filtering down. One of them bears the tell-tale snippet-mark of a leaf-cutter bee, and we remember to have seen two of these insects playing here in the hot sunshine of a few months ago. The dahlias are bitten with caterpillars, and here may some entomological postman get specimens of more than one moth. One evening last summer many adventurous May-beetles were flying round the street lamps outside, and snipe and other strange visitors

have been picked up alive not many yards away. The garden in the depth of a City gold-mine touches and attracts, like the wireless telegraph-pole, the great wide forces of Nature that no fork yet forged by man can quite expel.

THE REPENTANCE OF MAY

IT was during the early days of May that Earth, which had been romping towards blossom, found a check, broke her amble into a walk, and nearly stopped dead. Flowers liked this shrewish May even less than we did. Even those that thrive on copious watering seemed actually parched in the midst of those almost continuous showers. They seemed more inclined to put out prickles than large, cool leaves, as though their ambition was to ape those paradoxes of the botanist, xerophytes that live in water.

The gardener told us that the night frosts were to answer for it. We were looking at the sad sweet-peas as he spoke. Many of them thrust out a mere leafless straw from the soil, withered hands of protest against the murderousness of Mother May. We had thought that slugs must have bitten the shoots off, then that the sparrows had been trying their scissors on them in pure mischief. But the gardener said it was the frost. It can only have come for an hour or two hours on one or two early mornings, for when there has been none at midnight and none on getting up, the gardener has assured us there has been a sharp nip. There has been ice, too, for us to see, and that is hanging testimony. But we think the gardener has argued too much from these late frosts.

You can get ice from evaporation, never, it is true, without the temperature sinks to freezing-point, except by a very local chilling. Even a frozen bird-saucer does not prove that the flower-bed next to it has been frozen, any more than ice-pudding for dinner proves that the mutton was cold. An interested observer of these May frosts has written us that they attacked the ground only, not rising more than a foot above it. He admits that the early potatoes were ruined, and we can give the gardener his gooseberries and the sweet-peas and such other tender losses as he imputes to the discredit of his ancient enemy, the early frost. It has not, however, been a phenomenal May for night frosts, and the damage we have suffered, if damage it be, must be put down more to the ungenial character of the days.

Our opinion, which we dare not breathe to the gardener, is that we have been suffering from drought. Drought in the midst of abundant rain. Thus did the Ancient Mariner suffer from thirst in the midst of the sea. There has been "water, water everywhere, but not a drop to drink." It has been lying, as it lies in a mild winter, in barren soil, a soil with sleeping microbes or drowned microbes, and the plants must sleep till the microbes wake up and triturate the water for their use. Then the wind, which was ever with us, has swept continually over the soil, carrying away the top moisture, not by its warmth, but by its velocity. It dried the surface-film into a cake that set round the tiny necks of the plants, choking them, almost cutting their throats in a sheet of midday "ice," far more deadly than the more or less mythical ice of the morning frosts. If

a stick was thrust into this cake, it crackled and broke far round, as ice or glass breaks. It not only imprisoned the newly germinated seeds, but also kept the air out from the soil round established roots. Or it rose up in bubbles, lifting the plants from their roots and exposing them to the blast. Warm winds would not have produced this seal of glass, for they would have brought moisture out from the depth of the soil to replace that drawn from the top. But our winds of early May were always cold. They were not all east winds. There were winds from the west and from the south, but even these were cold winds. Many were wet, but as soon as they had loosened the cake they blew it dry again.

Just as the rainy days were days of drought, so the first day of sunshine, without wind, acted like a shower on ploughed land and garden, wood and meadow. Stomata opened; transpiration tubes began to act freely; streams of vapour ascended, swirled round the roots, pierced and vitalised the crust, drove through the grass, hung in the placid air, made the lambs gambol again in a field of flowers. It was like the end of the long wait for the cleansing eruption of a Turkish bath. We had begun to think it would never come, but a turn of the temperature broke an age of stone, and brought us the full luxuriance of May. The fool's-parsley has leapt waist-high, the hawthorn has broken out into scented lather, the dandelions are a cloth of gold, the woods swim in blue—leafy June is announced.

At length the bees are certain of their summer. Three times, at intervals of some ten days, we saw the golden *Andrena* come forth. One generation

gemmed the pear blossoms; rain came and swept them to the ground. They came again, and began to dig their holes in the lawn, but the wind rolled them in the dust, destroying them in hundreds. Now we have them again, a far livelier generation, restlessly sunning themselves on the laurel leaves, determined to enjoy themselves a while before rubbing their gold jackets away in mining operations. There has been a hard check, also, given to the hive-bees. The blossoms have not yielded nectar as they should, and the winning of such nectar as there was has been far more costly than usual. After many cold days, the sycamores were able one morning to brew a little honey. But the bees that came for it were like ships in a tornado. Sometimes they were blown away to leeward, sometimes plunged headlong beyond the blossom they tried to reach, and many a merchant started home far too crippled to reach the hive. The stocks dwindled at a rapid rate, and, because there was little pollen brought in, the nurses failed to make up the waste. Cold nights contracted the cluster, and for an important week or more the queen almost ceased to lay eggs. There will be a week soon, and that about swarming-time, when no bees are hatching out, and the pressure that sends the swarm out will come a good deal later than usual. The "swarm in May that is worth a load of hay" will be the exception, the mere silver spoonsworth of June being the rule.

Still, those to whom bees are the merest side interest will smile through that misfortune if certain other insects have been checked to a corresponding extent. The gardener believes that the blight has received a

check from which it will not easily recover. Such flocks of aphides as there were have survived the bad weather. We see them on the rose bushes and elsewhere, ready to resume operations now that warmth has come in. All that we can hope is that an early generation has been cut out from the usual list of nine or ten. Still, that is much. We have not yet had one of those swarming days when the green bugs, having arrived at the dignity of wings, spring into the air, and are drifted in millions to fresh pasturage. When swarming day comes, may the swallow and every other bird be there to guard us, with appetite multiplied by many mouths at home. It is the early shower of blight on very tender leaves that we fear most. The tenderest leaves were stripped off by those fierce winds of early May, and perhaps those that are left are of a hardihood to withstand blight.

A week ago we thought a great deal of the damage that had been done. Truly, the wheat was a sad sight when those drying winds swept the soil. But now that a still, steamy May has come, the world is reviving wonderfully. The plums have gone, but it was April, not May, that slew them. Apples and pears have been thinned, but the operation is always necessary. They have not been thinned excessively, the trees are unusually clean, and we think there must be now a good apple and pear year. The great good news is that the grass is springing. A week ago the coarser grasses were luxuriant, but the tender herbage that in an old meadow is as sugar to lambkins and milch cows was slow to come. The farmer looked across fields that seemed to ripple knee-deep, and declared that there was no grass. He could

THE REPENTANCE OF MAY 197

scarcely see an end to the misery that would happen if there should not be some grass soon. And, as though by the stroke of a wand, the grass has come. It is growing round the "golden hooves" of sheep as though it could race their appetite ; it is springing in the fields that are to be mowed, so that shortly they will be as bowls of grass, heaped up and running over the hedges. The corncrake runs about in it like a diver in a deep sea. The starlings that go there for worms and "leather-jackets" dive into it and are lost. Always one of the sweetest employments of the year is to walk through a lush meadow in May. More than ever delightful is it when a timid and distrustful generation has doubted whether there was to be any grass.

FULL-BLOWN SUMMER

THE town-pent millions who take their Whitsuntide holiday in the country cannot fail to be astonished at the intensity of summer that has been prepared for them. The fresh and flowery beauty of it all is heightened or softened, we cannot say which, by the perception of how much we have missed, and how soon all this exquisite blossom will be gone. There is autumn in the midst of spring—indeed, autumn is sometimes the predominant note. Down by the river the willows are shining as white as the May, but not like the May with blossom. Where the palms were are now tufts of shining willow cotton, the wings of the seed which, even while we watch, the wind comes and lifts into the air, as a snow-storm of Tantalus on this sweltering day. And the meadows which were last week, or a very little earlier, full of golden dandelions are now full of round clocks also, for Shawondasee to scatter with his sighs. The greater shower of all comes from the elms, which have been for the last month crusted on every twig with winged seeds. Now these million papery parachutes come careering down, filling the air as with a flight of locust, cumbering the ground almost as thickly as when the leaves fall, covering the river with a flowing skin, through which

the boil of a rising trout seems to be executed in treacle.

In the upper fields, however, summer has smothered all trace of autumn. The may, for which we have waited through almost the whole of its name-month, is now everywhere, creaming the hedges and the tall trees, beneath which rabbits skip, and breaking out in all sorts of unexpected places on solid wall-like stumps, where shoots of verdure are nibbled as soon as they appear. The air is full of the scent of the may and full of the hum of its myriad patrons. A pheasant comes flying down to the grass, and as soon as he alights is swallowed in its innumerable blue shadows. It is a miserably poor year of grass, but these hill meadows seem perfect revels of luxuriance. Under the upstriving fescue and foxtail, all manner of flowers in bloom make the senses reel with their variety and their beauty. The pink clover is coming out; showers of little golden cogs proclaim the hop trefoil; moneywort has trailed yards of tangle along the hollows, and is now punctuating them with double golden goblets. Bird's-foot is preparing great masses of orange and crimson; yellow archangel lights unexpected candles; purple orchids, cool and solid, stand contemptuously in the midst of striving grass. Red rattle has on its cap of liberty; purple vetches rise on invisible wires; veronica looks up blue as Mediterranean skies.

There are three flowers in the mowing-grass, all thoroughly in blossom now, that are the special pride and love of the humble-bees. It is undoubtedly they that have produced them in their present perfection, and it is to them that they belong, and them that they

serve above all others. All are of the purple that bees love best, and all are irregular in blossom—two facts that show that it is the bees that have formed them to their liking. The first, perhaps, is the bugle, with purple flowers on purple stalks, and set with purple bracts. It makes spikes of bloom, and apparent bloom that no bee can miss. The next is the *prunella*, or self-heal, richer in colour, though not more attractive, perhaps the commonest flower the world over, for it is found in almost every country. The third is ground-ivy, whose flowers peep, but peep very effectively, from beneath rings of leaves. They must be named in some order, but, in the estimation of the bee, "none is before or after other." Wherever either is found, there are the humble-bees, especially the great queen carder-bees, nominally half yellow and half brown, but the gold of the thorax has got sprinkled over the brown abdomen till the insect looks like a flying buttercup.

In the garden, summer has set her foot no less emphatically. There the may is pink or rich crimson, and it flaunts it in the neighbourhood of golden laburnum, the fresh leaves of copper beech and lilac, from purest white to most Tyrian of purples. In a place remote from this gaudy exuberance the long grey vines of the wistaria have burst into yellow-green leaves, and then into shower upon shower of the unique lavender blossoms. Its tonic harmony is the deep scolding of the starlings that come from the fields with beaks full of grubs and perch on the cypresses before going in to their clamorous brood under the eaves. Now is the time of the year to live the life of the farmer. The lean time of winter is

behind, the hard work of the harvest still to come, while every creature and organism on the place is engaged in yielding its annual handsome dividend. Lambs are fat for the butcher, calves follow their mothers through the grass, foals gambol on the hill-side, chicks and ducklings abound in the poultry-yard. To-day we opened a hive into which the swarm entered on foundations eleven days ago. We found the combs glistening with several pounds of unsealed honey, all the foundations drawn out into comb, grubs, eggs, and one comb solid with sealed brood. The bee-book tells us that this is nearly, if not quite, impossible. There should be allowed a day at least for the drawing out of the first comb, two days for the laying of four thousand eggs, three days for incubation, and six days more till the grubs are large enough to be sealed up. Yet our bees have done all this in ten days. The book does not allow for the mad energy of early summer. The queen, as we see in an observatory hive, does not lay in the foundation—some say she could only lay drone eggs there—but she does lay when the cell walls are only raised to half their height. The honey in our new hive and all the pounds consumed in the preparation of wax and the feeding of five or ten thousand grubs came from the apple blossom, snatched thence in a feverish ten days' foray. The apple blossom is gone, so will the hawthorn blossom, now pouring its sweets into the hive, so will the fragrant horse-bean, the white clover, the raspberry, and all the other delights of summer. *Carpe diem!* is the instinct of every summer thing, whether it be treasure or pleasure that is to be made sure of.

The sadness of summer is that we cannot make enough of its abundance. We feel it most when we have come from the town to witness only for a day or two a mere section of the pageant. But those who live in the country for ever see no more than the visiting townsman does of any one week's series of events. The pageant hurries even if the audience does not. "That dish was sweet; let us have it back!" Impossible! Crocuses are "off"; sweet violets have gone by; no more cowslips till next year. So, the trout stream slips by. No man ever bathes in the same river twice, even if, like the boys, he jumps in again as soon as he gets out. The boys even, who think a week is eternity, cannot make enough of the summer. Having dipped in the river they roll in the buttercups, rising yellow as bees, get wet again because they are dry, and then dry again because they are wet.

Such joys are not for us. We seek the cool cloisters of the orchard. Here the fool's-parsley has spread its white scum nearly breast-high, with a wealth of green feather under which rabbits sit and nibble. Young rabbits everywhere, and somewhere, no doubt, young stoats to eat them. Young crows in the ivied alder, clamouring for the young mistle-thrushes, whose parents have so far proved too valiant for the old crows. There are, however, young blackbirds and song-thrushes, and the young crows will not go hungry. The redstart sits and waits on a favourite bough, and dashes like a flame after the hover-flies and other insects. The orange-tip takes its winged saunter in and out the chequer of shade and sunshine. The tree-pipit plunges up into the blue, to come

down singing. He cannot know that there is a cuckoo's egg in his nest, though the corncrake does, to judge by the grating cry of derision that comes for ever from the tall lucerne beyond. The cuckoo, who has put out his young to nurse, has his own way of enjoying this delightful summer weather. But even he must go rushing about declaring that now is the only now, and that there are ten thousand yesterdays.

THE HONEY-FLOW

WHERE do all the bees come from? Yesterday they merely sauntered in and out the hive in ones or twos, as though it was scarcely worth while going out at all, for all the honey that was to be had. But to-day there is one continuous line of bees coming and going, the numerous dots flowing into a broad smudge like smoke, broadening and thinning till it is lost in the blue sky far out over the field. Yesterday we found parties of bees at work on a patch of rose-bay willow-herb, on purple rocket, and on the tall spikes of erect veronica. Each blossom was tried several times over, till it had yielded the last drop of nectar, and many times a bee wasted time by licking at an empty cup. But to-day every bee is off to the same harvest-ground, where there are a thousand blossoms for every tongue, and every bloom has honey. They fill the crop in five minutes, or three, where they took twenty or thirty yesterday. Each bee leaves the hive six times as often in the hour as yesterday, and so it seems as though there were six times as many bees at work. Nor can we help thinking that bees that stayed at home when honey-searching was of little profit have joined the excited throng now. Every one is for the harvest-field, now that the honey-flow has begun.

Ours is not a first-rate honey district. In fact, from one cause and another, this is the only honey-flow we have had this season. Happier bee-keepers look forward to opening the year with fruit blossom in May, and to our mind there is not a more delicious honey than that of the apple blossom. When our pear blossom was open, cold weather fell and high winds came, and blew the petals off before the bees could take toll. Then came the hawthorn, and with its opening another unpropitious time, and the bees have had to get a laborious living from colt's-foot, buttercup, and all sorts of miscellanies. It has been well noted that the hive-bee, unlike its wild relatives, when it goes out to forage, continues on the flower it first selected. It is a labour-saving trick. Once you have got the exact knack of a clover blossom, you can go from one to another at increasing speed, landing at the same place, extending the tongue at the same moment to the same length, mechanically and easily, as a cotton-girl tends a spindle. It pays the bee, and pays the flower, because by this means there is not all that mixing of foreign pollen that the humble-bees and others make in their random, happy-go-lucky fashion. But the hive-bee, like any one else, can adapt herself to circumstances. When flowers of a kind are few and far between, it takes less time to try the blossoms as they come than to give strict attention to their botanical affinity. In the very early spring you will see bees going from crocus to Christmas-rose, and even thence to the cold snowdrop, glad to get specks of nectar wherever they can be found. And in suburban gardens their attentions are sometimes thus miscellaneous

the summer through—until their particular honey-flow comes.

The nature of the honey-flow is usually notorious enough. If he has not anticipated it, the bee-keeper learns it from the colour of his bees' pollen bundles. There is no greater delight than to watch the workers running in from the alighting-board with the rolled balls upon their thighs. The prevailing colour is usually yellow, with here and there a flaming orange or, as it seems, a pure scarlet, to make you wonder where this bee has been. Last year, one bee in about ten thousand came home with bags of brilliant plum-purple, but we never found out where she got her burdens. Indigo pollen puzzled us for some time, but it was a frequent bundle, and therefore not difficult to trace. The pollen of the willow-herb is of an indiscriminate whitish colour till the ball is full, and then it takes on by accumulation this indigo hue. When the honey-flow comes, the bee-keeper likes to see the bundles a grey that is almost black, for that bundle comes from the white clover, the favourite of all lowland honeys. Ours is not so, the white clover crop being slight in the district, and the little there is apparently overlooked by the bees. The bees are all flocking to-day to the lime, and each one seems to have decorated her legs with a little round morsel of cream-cheese.

They are running into the observatory hive four abreast, a stream that you would think must fill the hive in a few minutes, for somehow we do not notice at the same time a corresponding stream passing out. It is still more fascinating to watch them coming into the garden hive, through a mirror placed on the

alighting-board, for we can thus stand behind the hive and out of the line of flight of the bees. We can see them fall and stick, then run on as though there was no second to spare. In twos, and fours, and tens, they come with the visible signs of wealth on their thighs. It seems as though some munificent hand were tumbling all the wealth of the country-side into our money-box. Just as in the observatory hive, but on a larger scale, cells are gleaming everywhere with honey. Bees are covering full cells with caps of exquisite whiteness. Some are hanging hand-in-hand for the production of more wax with which to fit walls to the flat foundations we have given them. Nurses are cramming happy grubs, or rather swimming them, in the food that they must eat for themselves in this busy place; others are urging on the queen to lay eggs for a still greater army to take advantage of the sweets that summer is providing so lavishly. Each one has her task, each task its bee, though everything is obviously ordered according to the willingness of each citizen to do the work that lies nearest.

Pollen nowadays is of little account. A week or two ago each forager had the greatest difficulty to get her burden safely into the cell. She ran a furious gauntlet through the nurses, hungering for pollen, and had to shake them off with a maze of dancing turns and twists. Now every one knows where pollen can be had, and the foragers lose no time in ramming their bundles into a cell and starting off for more. Many bees have been so careless about pollen that they have not rolled it in bundles, but come home smeared with what the flowers have put there.

Others have managed to get their honey without ball or dust. We do not see them now searching for pollen, as they did in March. It is an extra, deeply necessary, but so thrown at them by the flowers as to be not worth troubling about. The honey is the thing sought—the pollen is added unto them. Pollen will not keep except at the bottom of a honey-cell. It is excellent summer provender, and without it neither can brood be raised, nor can summer work be sustained. There are always grains of it in the clearest honey, there by a kind of accident, and adding no little to its staminal qualities. To the solitary bee it is more important than honey because immediate eating by the young is the only question. If any one has dug up the nest of an *Anthophora* whose grub has not hatched, and whose store of pollen has gone bad, he has never come upon greater nastiness of its size. This is manna which must be eaten to-day, and the needs of the next day gathered to-morrow.

In their wise way our hive-bees know all about the keeping of honey, and pollen too. The honey is not just bucketed and sealed, but fanned and warmed and cooled, fermented with the right, but not the wrong, fermentation, preserved with a dash of formic acid, and sealed just in the right condition. We hope there is joy in these chemical niceties, but surely there is joy in the gathering of the honey-flow. The under sides of the green lime boughs are a mass of golden stars that beckon you from the sunshine into the indigo shadows, out of the dry sunlight into the moist fragrance of honey temples, out of what breezes may blow into a calm that is soon made musical with humming. Every leaf seems to have become a bell,

a fuzzy bell that drones without clangour, that echoes with each stroke. It cannot have been "immemorial elms" in which was heard "the murmur of innumerable bees." The elm's wind blossoms are of February. There is no midsummer music to be compared to that of the lindens when the bees have got their blossoms. All the long morning and all the long afternoon they hum there as though there was nothing else than to sing to sleep the drone whose hammock is slung there. Unseen, each one slips away to the hive; unnoted, each empty one takes her place. Only the blossoms hang there all the time with their lazily offered golden reward.

THE VALLEY AND ITS SINGER

WE must have our valleys. Nature will have her valleys. Tablelands are the blocks out of which valleys are to be carved. Mountains are for feeding the valleys with living streams, and for breaking up the more boisterous winds into zephyrs for the valleys. First the mountains, blocks of raw material for the carver—granites, limestones, sandstones; flat, crumpled, laid on edge according to the design of the finished work. Then the glen, then the valley, then the vale—which, in two syllables, means farewell to that design, and the beginning of another under the sea. Under the sea the cracks of the glens are designed, the course of the torrents, the windings of the valley between its hills, even the roads that man shall hereafter build spirally round the flanks and over the passes—carriage roads, military roads, and railroads; for the conquering of other valleys or the tapping of their produce.

There is the same fascination about a rough group of mountains that there is about an artist's rough sketch. It often seems to us that we prefer the sketch. It is exhilarating; it "sings the rapture of of Breath"; but the finished product gives rest and sustenance. The struggles of giants are exhilarating,

but we could not watch with interest a struggle fore-ordained to be interminable. We must see one of them at last stretched on his back. Water and fire are struggling in the mountains, and the valleys give the result—the victory of water. Dotted all over the world are scenes known affectionately as Happy Valleys, Peaceful Valleys, Sweet Valleys, Golden Valleys. The note of the mountains is black or purple, the note of the valley yellow. Says Meredith :

“Yellow with birdfoot-trefoil are the grass-glades !
 Yellow with cinquefoil of the dew-grey leaf ;
 Yellow with stonecrop ; the moss-mounds are yellow ;
 Blue-necked the wheat sways, yellowing to the sheaf.”

The valley of the Mole has carved itself wide and smooth in the roundly yielding chalk. There are miles and miles of flattish fields sprinkled with grey-topped elms, veined with green hedges of hawthorn, dotted with red roofs and village spires, the whole bounded in the distance with low hills drawn in smoke. It seems as though the blue-grey Mole, showing here and there a coil amid the trees, might run out which way it chose, to the English Channel just as well as to the Thames. It has been trained so long to its present bed that no mountains are needed to preserve its obedience. It not only knows its way, but rushes with eagerness, for we see it churning itself into a white apron where a mill-dam has somewhat hindered it. Indeed, the guardianship has grown so lax that the Medway is filching the head-waters of the Mole, and may one day turn our valley upside-down. Our watershed is already a

good deal lower than the hills through which the Mole flows to the Thames, lower also than the hills through which the southern streams flow to the Brighton sea, whither one day the Mole may flow with them in preference to the ship-laden Medway. So let us enjoy our north-flowing Mole while we may.

After the plasterer, the paperhanger. After the chisel of frost and snow and thunder-storm, the covering of each slope, according to its angle, with flowers. Flora stands, with her hands full of seeds, ready for the time when the soil shall be ready for them. Or she keeps flinging them, and flinging them, among the chips, till some of them begin to stick and grow. We can almost calculate, to a degree, what is the angle of the primrose. Here the escarpment is just too steep, and there are none of the cream-yellow blossoms. And there, just a shaving less perpendicular, is a bank well starred. Thrift and grass clutch at these banks, and strive to keep them up, as though they were on the side of fire, and not of water. A whole hillside is plumed with black juniper, leaning hard uphill, determined not to be thrown down. "Flame-shaped," a daring touch, but so true that we almost seem to have seen such flames licking at a mountain as these do at the slope above the great white scar that the lime-workers have gashed to its bones.

Thousands of tons have been dragged out here to make lime, but for every single ton a thousand million tons have had to be removed to make our valley in its rounded hills—"the long green roller of the down—an image of the deluge ebb." The pines on the hill-

tops do not reach by six times to the top of the stone that has been removed since the hills were set up. High as he may go, the "running rings" of the lark are far beneath the rings that the dog-fish broke on the sea that deposited our chalk. Surely the sea has got back nine-tenths of what was her own, and our solid-seeming valley is no more than a pit in the sands of an hour-glass made by their running out. We get our best view of it all perched on the crumbling hill, and viewing the plain below in miniature. The cry of sheep comes up from where they are folded in a patch of rye. They look no more than silkworms nibbling at a mulberry leaf. The villages, of which we can count some half-dozen, seem permanent, because we know that that is what they would seem if we were in their street. But they are but bubbles in the vortex that is running to the sea. Still, the pace checks a little every year. As compared with the hurry there was when the first waters ran full of mud and stones down steep mountain-sides, this is rest, and such a valley stands for the truest rest we know. The veronica that grows between two crops of sea-anemone seems constant as the sky. At any rate, the veronica is older than man. Not so old, however, as it is young.

Everything is new in May, for the upholstery is everything. The yew and box have smoked with pollen, the pines are fragrant far beyond the dreams of last year, and the tide of flowers is coursing over all the fields.

"All the girls are out with their baskets for the primrose ;
Up lanes, woods through, they troop in joyful bands."

The gold of our valley is not really to be so basketed, but every year even the oldest of us is apt to imagine otherwise. "Sweeter unpossessed," yet we really must have one or two of the largest, smoothest blossoms. The first time we begin to doubt whether a basket of primroses may not be less than the highest good, then Eden suffers a serious invasion.

"... She knows not why, but now she loiters,
 Eyes the bent anemones and hangs her hands.
 Such a look will tell that the violets are peeping,
 Coming the rose; and unaware a cry
 Springs in her bosom for odours and for colour,
 Covert and the nightingale; she knows not why."

Can it really be that these children, gathering primroses, have no ear for the nightingale? His liquid notes peal and thrill from the straggling thorns that clothe our hillside, as though no one had ever heard such music before. There is not the abandon of the lark's "shower of sweet notes." The nightingale has always something in hand, and he thus requires of the hearer more than the hearer can give. The children very much prefer the skylark. They cannot afford the attention that the nightingale needs. You must listen to the nightingale, waiting and wondering for what will be the next agony of sweetness, and not feeling surprised if it does not come. How different the lark's:

"... silver chain of sound,
 Of many links without a break,
 All intervolved and spreading wide,
 Like water dimples down a tide."

It sounds, comparatively, like a hurdy-gurdy, yet the lark will not be gainsaid as the songster of young earth. When we see the chubby village faces upturned to follow him in his vulgar ecstasy, we are quite certain that he gives them quite as much spiritual enjoyment as is good for their healthy age.

Our valley, instead of widening as it goes, runs almost through gates at Box Hill. The chalk, soft as it is, has stood the ravage of water better than the ragstone and weald clay. Box Hill is steep as a mountain, perhaps because the box has kept its wall up. If you begin to scramble down, it needs all those tall, thin stems to save you from falling into the Mole, that runs sucking at the base of the hill. Then you can cross the floor of the valley in a few strides, and again rise up to the heights of Ranmore. Our valley will be really more orthodox when the Medway or the Arun shall have turned it upside-down. But our chalk hills can never make a respectable watershed. They are sponges into which the rain sinks, to emerge, quite unobtrusively, somewhere beneath the ground-level of the valley. There are gulleys that, in other hills, would be tinkling glens, but no visible stream runs down these chalk-hill gulleys. If they begin to run, they sink through the bed, to take up their course in a definite channel underground, or just to wet the sponge to oozing-point lower down. These streamless valleys, however, make pretty gorges in their green grass and their woods of pine. We fondly call them Switzerland, especially that one which teases into sharp zigzags the road that will ascend its sides. At the foot of it a little house backs into a tall screen of pines—a

216 THE ROLL OF THE SEASONS

wall of pines full of sunshine and the drone of doves.

"Doves of the fir-wood walling high our red roof
Through the long noon coo, crooning through the coo."

That is where the Singer of the Valley finished his mountain life.

THE CUCKOO'S MATE

THERE is a tree on the South Downs that has probably had more wrynecks on it than any other tree in the British Isles. It stands on a high hump of the Downs, far from other trees and at the edge of the trench carved by one of the rivers in that great wold of chalk. The river is a line of migration that has guided the birds northward for thousands, or perhaps millions, of years. The tree is the first resting-place this side of the sea. All manner of birds, fainting just a little from their long sojourn in the air, drop to this tree and twitter there a while before resuming their journey into Merrie England.

Who can imagine the feelings of the returned wrynecks as, on a genial April day, they feel the first English twig between their claws after their stupendous flight out of Africa? It is not, however, the supreme end of their homeward flight, and, tired as they are, they take little rest in this Sussex tree. Onward the little bands go, dropping units here and there as last year's scattered homesteads are reached. Our own wryneck is at length happy when he perches, as well as a wryneck can perch, in the orchard of twisted, moss-grown apple trees. The orchard is happy when he breaks out into the flute-like "Hoo-

hoo-hoo-hoo," without which April sunshine, however mellow, would seem to lack something. He goes and visits the ant-hills of last year, and finds with delight that they are as well stocked as ever. The same soft-wooded willow holds grubs for his easy capture. We hope that he notes with approval that the same humans inhabit the house among the flowers.

A few days later both the wrynecks are in the orchard. We like this courtesy among the birds which usually sends the males ahead of the hens, to see that all is straight, and to prepare a welcome home for their spouses. We can imagine that he takes care to know just where he can get the juiciest morsel for her refreshment on arrival. When they revisit the old nesting-site, they not infrequently find that a great or a blue tit, winter-abiding birds whose nesting begins earlier, has begun to build there. It is a trifle that does not worry the wrynecks, for they proceed to haul out the labour of the tits, and reduce the floor of the hole to the bare requirements of the woodpeckers they are. The wryneck's laugh proclaims him kindred with the great green woodpecker, one of the noisiest members of the tribe. It is with a woodpecker tongue that he picks up ants from the ant-hill. His feet, with two claws, instead of one, turned backward, not only put him among the woodpeckers, but suggest a horrid possibility. Has not the cuckoo such feet as this, and may it not be that the nest-usurping habit of the wryneck may lead to a more definite parasitism? Possibly the first cuckoo merely stole the nest of some other bird in which to bring up her own young in a proper maternal way. Then, perhaps, she relinquished the

nest with her own egg therein, half incubated or fresh, and at last adopted the easiest way of all—to put her egg there without bother when the owner was out, and leave the rest to a fooled maternal instinct.

It is not likely that all the facts, anatomical and otherwise, were considered before the instinct of the country-side christened the wryneck "cuckoo's mate." The fact of its arrival punctually a few days before the cuckoo, and possibly the not very remote resemblance of its call to that of a cuckoo, made it the herald of the bird of summer. On the other hand, it is possible that a cumulative instinctive knowledge of some of its habits and peculiarities made men grope to its name on the same extended grounds that have bidden systematists put it on equality with the yaffle in a sub-family of the *Picidæ*, or woodpeckers, and in the same order as the *Cuculidæ*, or cuckoos. The yaffle, or green woodpecker, has many of the wryneck's distinctive habits in a less degree. He can turn his neck with almost the same snake-like suppleness, and can hiss as effectively as the "snake-bird." But the wryneck is specially got up for the earning of its name, having an exaggerated eye-stripe that accentuates the apparent contortion of the neck. A well-accredited writer indeed declares that the wryneck can twist its neck so far "as to allow the head to make a complete revolution on its axis." That, however, is not the fact. Even *torquilla*, the twister, has its limitation. In compensation we will strongly insist that its family name of *Iyinx*, the shrieker, is a cruel misnomer. There is not a gentler, mellower, happier cry in the whole gamut of an April day than the seven-

fold "Pay-pay-pay," as some have written it, of the wryneck. In tone and pitch it is rather near the "Jug-jug-jug" of the nightingale. It is in its evenness of syllable and absence of passion that it declares itself unmistakably picarian. We admit that the galloping hessian shrieks, but never will we allow that term to the cuckoo's mate. If the yaffle's is a horse laugh, then the laugh of the wryneck is a silvery feminine ripple. It is in complete tone with the opening pink of the apple blossoms, the hum of bees, and the scent of violets.

We have said that our wrynecks belong to the orchard. It is almost never, during their summer stay, that they are seen outside that rather narrow domain. It is a marked attribute of many of our summer immigrants that, between their great travels across the ocean, they occupy the most limited of stations. The willow-wren has its special corner of the lane, and day after day can be seen sitting and singing on the same arch of blackberry bramble. The spotted flycatcher haunts, more or less, one perch, whence it makes its dashes at passing insects. The redstart covers rather more ground, because it has a nesting centre and, for prudential purposes, a separate hunting centre somewhat removed. But its daily attendance in the same hunting centre is one of the most constant phenomena of summer. Most of these have skulking habits, exercising the wing so little that you cannot help thinking that, if you got one of them in the middle of a forty-acre field, you would be able to run it down. Surely it would never manage to fly the whole way to the nearest hedge. Yet these are the birds that, without the public practices that the storks, for instance, take

daily for weeks before departure, fly through half the longitude of the globe for their winter holiday and their summer resting.

To aid it in its creeping habits, the cuckoo's mate is pencilled in the most marvellous way into an invisibility that no one colour could give it. Of course, it is a wonderful scheme of protective colouring, and, in a general way, we can see or feel how generations of selection brought it about. But how, in the first place, does the body of the bird achieve and keep constant so intricate a pattern? Says Mr. Pycraft, in his latest book on the "History of Birds," in considering the lines on an individual feather: "These lines are not continuous, not organically complete, but formed by the exact relation, one to another, of a series of minute spots of pigment each lodged in a separate filament, so that the several spots in each separate filament, when ranged side by side, form the several series of lines, straight or vermiculated, as the case may be."

It is comparatively easy to understand a bird getting blacker and blacker, or greener and greener, all over, in response to the double call of the influence and the needs of the environment, but not nearly so easy to imagine how, when the delicate veinings of decayed and cracking wood are to be imitated, determination is come to as to which part of which feather shall represent crack and which the grey of the smooth surface. The dot on any given filament could, obviously, form part of a longitudinal or a transverse strip, of a complete circle or square, of a concave or a convex design. When a striped bird becomes a barred bird, as undoubtedly has happened now and then, perhaps some pivotal dot remains, and

the stripe gradually swings on it to form a bar. More likely, the stripes break up into dots by the breaking in of horizontal lines across the vertical, and then the dots join up by the sides. It is a process that takes ages. Our wryneck no doubt saved a few million years by taking the shortest cut from some ancestral family plumage. There is a good deal of incipient mottling among the woodpeckers that seems to lead the way to this unique poker-work. The lesser spotted woodpecker comes the nearest, and makes us almost regret that the wryneck could not have retained the family red crest. That touch of gaudiness, however, would have defeated the whole plan. A humble bird is our cuckoo's mate, and must therefore go humbly clad.

THE PUCKERIDGE

THE sun has ridden through the heavens triumphantly, sending the birds into the thickets for the midday siesta as they have not been sent before this summer. It has been a day for the insects and the lizards, and this night shall be one through which the adder hunts the field-mouse with a zest increased by a ten hours' bask in baking sun. As the first cool shadow descends on the hot leaves of the wood, and the cold lamps of the glow-worm are beginning to peep in the bank under the hazels, the crooning rattle of the night-jar trembles. Trembles where? It is not in the thicket of guelder-rose and spindle wood; not in the larch spinney; not in the mowing-field; nor in the shrubbery, the orchard, the warren, or the chestnut avenue. It is everywhere. It is the air that rattles, the night, the universe that resounds like a piano when the bird chooses to spin its song tuned to the echo of everything.

It comes pouring down as if from the larch spinney, but sounding like a late mowing-machine at work several miles away in that direction. It comes down on to another gear and reels on and on till surely the bird's lungs must collapse for want of breath. Then it breaks suddenly as the singer's mate dashes by and

the singer flies after her on muffled wing. We shall be nearer them in the wood of guelder-roses, where the lamps of the glow-worms are twinkling. It is a haunted wood. Now the reeling is on the right, now, without any interval for changing, on the left; now just beneath us among the hazels, now far away across the stream; now clicking like a new winch, now purring like a very long-winded cat. Then surely some one is sitting in a quiet bush to startle us by clapping together his hollowed hands, while a confederate highwayman acknowledges the signal with a cry of "Co-ic, co-ic" from another bush. It is just the fairies of the wood making the most of a very balmy night following the first hot day of the year. We lean very quietly against a gate between the wood and the mowing-field, where a little light smudges the dark alleyway, and wait for the fairies to declare themselves a little less ambiguously.

"Co-ic, co-ic," the mellow cry breaks out suddenly close under our feet. There is something sitting in the light-smudged alleyway and croaking thus mellowly. A toad for certain. It does not stand up on its legs, but sprawls on its stomach. It shuffles a little farther into the light, and again cries "Co-ic, co-ic." But we can now see that though it has no legs it is bird-shaped. We can even make out the big, soft, lunar markings, resembling the stains and lines on dead wood, that belong to the night-jar; we even think we can see a little of the bristles that fringe its mouth and enable it to catch its flying food so easily. Then, having croaked once or twice more, it lifts itself from the ground in some miraculous way—for it takes no run or spring as other birds have to do—skims

over the gate on which we lean, and away through the hay-field. At the same moment its mate flies from the thicket and pursues the croaking one, striking his wings together over his back, and producing that hollow-handed clapping that had made us think of something human lurking under the bushes.

Everything that the puckeridge does gives it an air of distinction among birds. Just before this evening purring begins, we usually see a bird with lobed wings, like those of the lammergeier, wheeling high in the air. There is no other English bird like that; it is the puckeridge, perhaps on its way from one of its day haunts to the scene of its night gambols, perhaps sweeping the heavens for the same minute insect-life that sustains the swallow. Every one who writes of the night-jar has something about its "hawking for moths in the bracken," or "wheeling around trees, capturing ghost-moths." It is a thing we have never seen, though we have seen night-jars and bats hunting the same district, and have over and over again seen the bats thus enjoying the pleasures of the chase. We have no doubt that many have written of this thing who have not seen it. It is so easily imagined that a bird of this size should require larger food than midges, yet the fact remains that the night-jar's wide mouth, with the fringe of stiff bristles round it, is exquisitely designed for sweeping in tiny beetles, gnats, and the other trifles that swallows feed on by similar means.

"It beats to and fro," says Mr. Charles Dixon, "over the open heaths and fern-brakes, under the trees and round about feeding cattle, in quest of the moths, beetles, and other night-flying insects upon which it subsists." It was its close attention to cattle that

earned it the name of "goat-sucker," our forefathers thinking that it must suck the goats, if not the cows. The cow is a favourite ally of the yellow wagtail, which subsists on the small insects that frequent the neighbourhood of cattle or are stirred up by them from their rest in the long grass. The swarm of small life will thicken round the great warm bodies by night as well as by day, and the night-swallow will sweep by again and again.

When does the puckeridge sleep? At early dusk it becomes active, chasing its lifelong, but ever-wooed, mate about in the silent flight of the owls, humorously broken with wild clappings. Then it settles down to a night of reeling of such continuous energy that we cannot see how it leaves time to catch its food. And by day, when we walk in the woods, as likely as not we come upon the night-jars as ready as ever to fly off when we come too near to their resting-place. It is then that the one vanity of their plumage becomes fully conspicuous. The tail is tipped with white at the outside corners, and there are white notches on the wings which mark their rise and fall, as though this were the bird of all others that had set itself the task of showing man just how flight is managed. And by day it shows us how that clapping is accomplished, for we can see the wing-tips meet overhead at the time when the sound comes—though not with the eerie resonance that it acquires in the silent night.

What it does not show us is how the bird-throat can produce the prolonged reeling, jarring, churring, or purring that is its speciality. Here comes in that further mystification, the "comb" with which the night-jar's foot is furnished. Not knowing what other

purpose the comb could serve, it was the delight of naturalists not many years ago to fancy that the night-jar blew its music through a comb (the usual tissue paper not being specified). But the night-jar can with care be seen at song clearly enough for us to be sure that it does not sing with its foot in its mouth. The comb, no doubt, serves the same purpose as the similarly armed foot of the bee—to clean the night-jar's whiskers—and its music is purely vocal. After all, we have one more inhabitant of England's summer woods with a song of the same kind—the turtle-dove. The fern-owl sings the turtle-dove's song, not openly as the dove does, but as though through the clenched teeth, and, to follow the same simile, it thereby holds its breath better and sings perhaps ten times as long without appearing to take breath. It churrs on a high note till we think it has reached the utmost limit of endurance, then without a pause it gives us equal measure on a low note. It seems, indeed, that it would never stop, if it were not that its volatile mate swoops by and interrupts with an invitation to a game of touch. Our woods would seem empty indeed on summer evenings if they should lack the droning, playful puckeridge.

THE ROSE AND THE SHOW

THE roses in the show-tent are bewildering in their beauty. The impression they convey to the eye is after a while as confused as their mingled scent, and the eye, except of the keenest connoisseur, is cloyed with the eternal perfection of form and colour. The one best bloom from each of a thousand plants is there—reared with great care, selected and trained somewhat for several days before the contest, so that it could be brought up to the show-bench in the nearest possible pink of condition. They are beautiful captives groomed and decked for the slave-market—less perfect but more beautiful in the homes from which they have been snatched. Or say that they resemble whole roses as an artist's most successful bust resembles the living man.

Even in the garden of the rose-lover these exhibition roses are but as busts. They do not swing on the free arch that makes the rose-bush one of the most beautiful objects in nature. They stand on chopped shoots stuck in the bare earth, as though some one had put skewers in the ground and then tied on paper flowers many sizes too large. The roses on the wind-flung arches are beyond the judging capacity of a flower-show, as the arches are

beyond the capacity of the tent. So we bring here our choicest blooms of every kind, that incipient rose-growers may know, or guess, what may be the glories of his garden when he can make up his mind which of our captives to purchase and liberate there. For we can shock the vendor by letting his "dwarf maidens" fly upward and become hamadryads; his Parisian *La France* fling out into something of a *Marseillaise*; his sadly pensive *Frau Karl Druschki* regain her youth and exuberance. She, at any rate, as one of the most real of modern roses, will retain in liberty even the graces that appeal to the judges here. The pale pink of *Caroline Testout* shall keep her in countenance with almost equal grace as they ramble in the pergola or throw kisses to one another from old-fashioned standards.

We are indebted to the shows for reminding us of the infinite variety of the roses. The very wealth there is to choose from for a long time discourages him who wants his rose-garden to do him justice. Of the making of roses there seems to be no end. Every year there is some new beauty for the public to run after, and we cannot always tell whether the chase is going to be of short duration or will establish a permanent favourite. As with books, so there are many roses that have unjustly perished under the avalanche of less worthy newcomers. We could not, perhaps, take a better instance than the old *Cloth of Gold* which came to us over sixty years ago. Its big golden bells and the tree's pretty way of wearing them seemed to strike a new and lasting note in rose-culture, but now for all practical purposes the *Cloth of Gold* is as extinct as the Dodo. Yet it

grows here and there on some favoured south wall, and perhaps will come again as a "new" rose when we have got tired of our last batch of teas or perpetuals. Cloth of Gold is (or perhaps was) a noisette, and therefore descends from the Indian strain, mingled with that of the musk-rose, from which comes ottar of roses, and which flings its petals over Omar Khayyám's tomb. Aimée Vibert has outlived her younger sister, but the other noisettes of early Victorian days have gone. Maréchal Niel would not be recognised as a descendant by those who loved Ophirie and Celine Forestier, and to-day the noisette race is lost in the great crowd of the "tea-scented roses" with which it has mingled.

The numerous cabbage-roses of our grandmothers' days are supposed to be extinct, but surely their place is well supplied by the two thousand or more hybrid perpetuals which more or less justify their name by filling our gardens with heavy colour the summer and autumn through. The Indian, French, and Damascus strains that supply the hybridisers with their favourite material have thus far proved wonderfully complacent. Perhaps there are new triumphs ahead. Perhaps we are being led into a cul-de-sac. Perhaps, when the varying period of these roses has worked out, our own dog-roses, the Banksian, the beautiful wild Carolinan, and the tribe to which the Japanese rugosa belongs may begin to produce that "swarm of mutations" which, some evolutionists say, comes to each species once in a thousand years or so. These are wilder roses than the others. They have for the most part resisted the beginnings of the policy that would end in making them into

"dwarf maidens." Perhaps a worthier fate will make some of them the parents of more beautiful roses than Gruss an Teplitz, and of equally beautiful growth.

Our own wild *Rosa arvensis*, parent of all the Ayrshires, and aunt of the pillar and pergola ramblers that make our gardens exquisite in the month of roses, has won its triumphs by constancy and moderation in its variations. The nieces of our field-rose are the daughters of *R. multiflora*. The Crimson Rambler is sixteen years old, and deservedly as popular as ever where the pillar or the pergola is a feature of the flower-garden. Almost as brilliant a crimson, but with open single blossoms showing the golden stamens, Leuchstern covers itself assiduously with clusters from head to foot, and strikes the eye as powerfully as Hiawatha, not of the same strain, but aptly associated with these crimson glories. Nor must Hélène be omitted, one of the best of these climbing roses, neither single nor double, a cheery grower, and a multitudinous bloomer. The others are wellnigh legion. Let us mention two more—Euphrosyne and Psyche, both pink, scented, prolific, Psyche yielding a little in depth of colour and clearness of scent, but none in generosity of bloom. Félicité Perpétué comes of another species of the same division, and adds to the charm of its blush clusters a glossier leaf that proclaims it an evergreen. Then what if, having exhausted the crimson and pink glories of our pergola, we find a rose throwing clusters of open, pale cream, clematis-like blossoms far along its appointed sphere of influence? It is pure and simple wild *Arvensis* herself, more than

holding her own among her brilliant descendants and collaterals.

The hand of the hybridiser has already been laid on the *multiflora* group. A cross with the Indian rose has given us those perpetual-flowering dwarfs, the polyantha, good for garden borders and for exhibitions where the entire tree is invited. Etoile d'Or and La Paquerette are worthy members of the class, while Claire Jaquier is a notable undwarfed hybrid, with its unusual Nankeen-yellow blossoms to reward those who take good care of it. Lastly, there is at Kew a large, clear crimson single rose, the progeny of Wichuriana and that gallant hybrid perpetual, General Jacqueminot. Shortly, no doubt, we shall have ramblers as numerous as the teas and the new cabbages.

Still the most beautiful of our English roses, the pink-white rose of Devonshire lanes, stands aloof from this rush of new kinds that the others yield to the insolent gardener. Still she flings her sprays along the hedge and compels us to admit that there is an untamable beauty of the wild above that of the garden. One variety, the sweet-brier, has given us the exquisite chromatic series that has made the name of Lord Penzance famous in rose-gardens. They are the very stuff for hedges to guard the pampered beauties of the rose-garden's inner sanctuary from too close comparison with the barbarian world of the wild garden and the outer fields. And in inner and inmost rings within the sweet-brier we can plant our roses as far as they will go, down to the creamiest, frailest, most artificial exasperations of witchery that centuries of horticulture have given us.

AUTUMN

AUTUMN—CONTENTS

THE SURPLUS OF SUMMER.
A USE FOR THE PARTRIDGE.
THE GAME OF DEATH.
MEMORIES OF SNOWDON.
SEPTEMBER SUNSHINE.
THE LITTLE LION.
THE MODERN HEN.
STONE-DWELLERS.
THE SECOND SUMMER.
REVEALING NIGHT.
THE UNNECESSARY BROCK.
WATER-FOWL IN LONDON.
FOUND AT THE ZOO.
THE BOY AND THE WILD.
THE OLDEN FARM.
THE SEEING EYE.
AN OCTOBER PIKE.
A YEAR OF SNAKES.
TOWN AND COUNTRY MICE.
WHY THE LEAVES TURN BROWN.

Summer is gone on swallows' wings,
And Earth has buried all her flowers ;
No more the lark, the linnet sings,
But silence sits in faded bowers.
There is a shadow on the plain
Of Winter ere he comes again,—
There is in woods a solemn sound
Of hollow warnings whispered round,
As echo in her deep recess
For once had turned a prophetess.
Shuddering Autumn stops to list,
And breathes his fear in sudden sighs,
With clouded face and hazèd eyes
That quench themselves, and hide in mist.

THOMAS HOOD.

THE SURPLUS OF SUMMER

IN the sun-speckled orchard there is the soft frou-frou of wings, followed by the sound of a peck at some moderately hard substance. From among the leaves of a tall tree depends the rounded tail of a blackbird, whose body is hidden in a breastplate of green. Fallacious breastplate, for at the tiny smokeless crack of the rifle down comes the owner of the tail. Almost every pear of this early tree, and of other trees yet far from ripe, is scored or hollowed by the beaks of these marauders. The little rifle can make but small inroad against them, for at each crack, tiny as it is, they grow more wary. It is almost always a young bird that falls, the wily old cock being particularly difficult to account for. He cries warning to his offspring from afar, and if they will not heed, more or less leaves them to their fate, whereas the hen is liable to make fatal fuss over the fall of one of her chicks. Plead mercy for her those who have no orchards just now harried at every moment of the day by hordes of blackbirds completely sworn off from other food.

In spring our blackbird is almost entirely ingratiating. The cock sings with sad beauty from the freshly bursting bough, and they are both immensely

busy among the worms and grubs—mostly, it is true, among the worms, but how many of us remember that these are friends and not enemies of agriculture? We rejoice in the blackbird then, and even take pains to prevent the irresponsible boy from destroying its eggs. It is left to the jays, if we do not shoot them, to keep the breed down somewhat by eating every egg or birdling they can find. But in spite of the jay and of other natural checks, the blackbirds increase mightily every summer. A second laying quickly replaces the lost clutch, and the unmolested bird seldom fails to rear two healthy broods of five apiece. Every ebon songster of spring is now the leader of a dusky troupe, from which perilous autumn and winter must select the strongest and wariest for the work of propagation next year.

A similar and often more welcome surplus is evident in most directions. Two pairs of flycatchers came to us in spring. Now there are two, if not three, broods on the wing, and an interesting family of three about to leave a late nest. In all manner of places we see the low-sitting bird waiting for a pounce, or its long-pointed wings flashing after the invisible, twisting prey. The long flight southward, the unknown dangers of an African winter, and the return next year, will inevitably reduce our score or so of flycatchers more or less to the two pairs that have been our average portion for twenty years past. Yesterday we looked below the coping of a dry wall at the three nestlings of the second brood of wagtails. The first brood has entirely vanished long since. Their parents, having fed them first and last with a myriad flies and grubs, gave them in some way to

understand that there was no longer room for them about the homestead, and so they have moved on. But whither? Has not every farmyard its pair of pied wagtails that has similarly reared and banished a brood, if not two. We cannot think with equanimity of the tremendous weeding-out that must fall upon these exquisite and useful birds.

The tiny down-lined cup in the elm tree has scattered its little goldfinches into the thistle-field, where they are joined by other broods, till there is quite an army fluttering like butterflies among the purple blooms and blowzy ripe heads. Here, too, are the red linnets and cole-tits almost beyond counting, though we knew but one pair of the latter in spring. Greenfinches and chaffinches are at times seen with the sparrows in thousands ravaging the standing corn, sometimes mobbing a hawk and sometimes paying penalty. Again it is the actual young surplus that is cut down. Nature takes the line of least resistance, and among the easily caught, easily plucked, and tender to eat birds of the year, the hawks, and even the crows, spend the fat time of late summer and autumn. The young greenfinch is provided by nature as a means of teaching the young hawk its business. And the young partridge, too, we think, as we come upon a circle of brown feathers in a hollow at the top of a bank, that the hawk often chooses for plucking his kill. But a moment's examination dissipates our fear. It is written that dog shall not eat dog, but here undoubtedly a hawk has struck down a hawk and eaten it to the last scrap. The circle, measuring scarcely a foot across, is full of the feathers of a young kestrel, the flight-feathers with

juicy barbs roughly forming the outer ring, then layer after layer of the inner clothing, out of the centre of which has been picked to the last scrap the carcase and tender limbs.

There goes one of the potential enemies of the voles, whose summer progeny, and progeny's progeny, have, in spite of restrictions, riddled their part of the field with clean round holes in the ground and secret tunnels in the grass. Never mind. The young weasels will want some, till the unreasoning keeper traps them and sets them up in his "larder." Last night, too, the young owls were proclaiming their sharp stomachs, if yet feeble beaks, all round the house as we lay in bed. One on the elm, one on the roof, and one by the barn called their tu-whits to one another more quickly than a ball could fly round a circle of expert catchers, till a parent with a long, querulous admonition bade them all be silent and follow him to another place. The vole balance will not lack adjustment so long as these winged cats are about. Some of these "mice" will have already become food for the young foxes, for our vixen has gotten herself five of these that gamble in the bracken and round the bushes of their natal field, scarcely at all to the dismay of the rabbits, with whose multiplication the fields teem. In the daytime you will only see the tiny ones of the latest apparent litters (there are later ones still in several stages in the stops that she does keep so secret). But as the cool of afternoon draws on, larger and larger rabbits come forth from their holes and begin their gambols and their extended foraging that shall before dusk dot the banks all over with creatures nineteen-twentieths of which were non-

existent at the winter solstice. An overwhelming proportion of the surplus will be non-existent before another breeding season begins, the manner of their removal being far more varied and dramatic than the killing of as many human heroes in the pages of Homer. Some for the fox, some for the stoat, some small ones for the owl, some for the thundering gun, some for the quiet rifle, some for the ferret, the cat, the poacher's lurcher, the wire, the motor-car, the mowing-machine or reaper, till the hardy or lucky remainder of next year's horde sees again the young grass and hears the cry of the returned chiff-chaff.

Heat expands and cold contracts. This axiom of indifference when applied to physics seems to us like tragedy when applied to the hordes of living summer beings that must be reduced to a tenth by the winter. It seems to be another phenomenon, the atoms being not merely pressed together but picked off and destroyed. We will not put it higher than "seems," for we have seen the dead thrush build up the living hawk, and for all we know, the vanished rabbits of one year may account for the fecundity of the next. The manure-heap has its tale of increase not merely in the worms that batten in its rich decay, but in dozens and dozens of snakes' eggs glued in a kind of double chain, usually coiled into bunches of extra large white grapes with shells almost as tough as leather. With marvellous secrecy the great snakes, whom every unreasoning farm hand kills at sight, have assembled almost under the very windows, and have placed their eggs here where alone they can germinate. The heat of this summer and of last winter is converting the liquid contents of each into scaly,

efficient seven-inch serpents with all the false menace and more than all the grace and beauty of their parents. The farmer has only to turn over his mixen one day this month to destroy all this generation of "varmint." But with all the will to do so, the golden days slip by one by one, and the risky expedient of the old snakes succeeds. The hundreds of small snakes escape from the leathery egg-shells, and no one sees even a tail of all the serpentine vitality with which the dung-heap teems. Just as certainly do the warble-maggots slip from under the very thumb of the farmer on the backs of his cattle, to destroy more hides and drive frantic more heifers and bullocks next year. That is to say, one in every ten of them will survive frost and rain on the bare ground, in order to produce ten warbles next year.

A USE FOR THE PARTRIDGE

THERE is not a more pleasant time of the year than the popular, ancient "First," that calls forth Englishmen to utilise a beautiful day by killing partridges. The "Twelfth" has the advantage of claiming rendezvous on the high moors where life is alone endurable when August is rushing to its zenith. The delights of the purpurescent moors spread interminably under a blue sky are unique. But the pursuit of grouse is a rare and local pastime; the birds are rather slaughtered than shot with that epicurean economy that makes a small covey of partridges go such a long way; and for every one that goes out after the bird of the heather, probably a hundred will walk standing crops or stubble for the lowlander.

There is an unmistakable new breath in the air on some early autumn day that falls as often as not on the First of September. The keenness of the night, with its heavy deposit of dew, has not departed. Garish summer is just touched with one flick of a sterner brush, and made, as it were, human. Like Undine, it gets a soul through tribulation. Dewdrop by dewdrop, the sun licks up the moisture that has made turnip leaves and deep grass so crisp, but suspends it in the air to cool the breezes that comfort the partridge shooter in his long tramp from

the hill-field to stubble and back again, as the voluntary or driven movements of the birds determine. The partridge is the thread on which the other delights of this glorious day are strung, but it has scarcely more to do with its real pleasures than with the health we derive from it. The partridge leads the more observant kind of man through a kindergarten course in agriculture. He notes with astonishment the thick yellow veins, and the enormous leaves with which the swede is assimilating sugar and other treasure, and conveying them to the great bulbous root. He wades through horse-beans, this year five feet high, and must hold his gun almost continuously above his head if he would be ready for the up-whirring covey. He marvels at the depth of the purple-foamed sea of lucerne, and marvels still more when he learns that this is the third crop of the year.

The grouse stands almost alone as a victim of the "Twelfth," but there are many others to share the partridge's danger on the "First." The sweet-toothed hare may ruffle the foliage of the swedes, and end by taking a run in the open that almost inevitably proves fatal, though it is probably the gun that has been missing partridges all day that brings down puss. The feeble-looking but artful landrail is, as it were, a titbit for the gun that has been sated with the burlier and more frequent bird. The wood-pigeon, clattering from a beech or from some depredation in the field, is too plump, and offers too sporting a shot to be allowed to go away unchallenged. The agricultural plains and valleys that the partridge loves are as rich in surprises of fur and feather as in variety of vegetation.

The nut sprays are unusually rich this year in fruit, lately conspicuous by reason of their livelier green, already turning the bright red that comes just before the real nut-brown. Their topmost branches are wreathed in the fluffy festoons of traveller's-joy; beneath them ramble blackberry briers whelmed in fruit slowly beginning to ripen. There is surely no bearer of edible fruit more constantly prolific than the blackberry. It furnishes an income to hundreds of cottagers whose families, when the partridges have been shot, will roam these fields with baskets, to be poured into puncheons, to be packed into truck-loads for distant town consumption. More beautiful but less useful, the bines of the red bryony are studded with berries in pleasing alternation of green, lemon, and scarlet. The hips are turning, though the last white rose has not fallen; elder-berries are passing to their ultimate black; haws coming out of their green before scarcely a leaf has wilted; sloes turning well-bloomed purple; and the ultra-scarlet berries of the cuckoo-pint offering their dish of poison to any simpleton it may concern.

A wounded bird leads us to the wood in which the most brilliant fruit just now is undoubtedly that of the wayfaring tree. These stiff clusters of flat berries ripen black and soon fall off. But now they are on one side almost white and on the other brilliant red. Each cluster of what was in June white blossom, that shone in the dark like an illumination, is now brighter than a flame. As we look down on the whole wood from the hedge at the top, every warfaring tree or mealy guelder is patent at a single glance, and the most hardened sportsman rejoices that the pursuit

of the partridge has led him to this corner of the shoot. The still richer glories of the guelder-rose proper are not yet displayed. They belong to the time of rapidly falling leaves. But the three-lobed fruits of the spindle tree are already in pink, their oddly contrasted scarlet still tightly closed up.

By midday the sun has gained its short ascendancy over the dews of night and the mists of morning. Hot summer reigns. The food of the swallows has been sent high in the blue sky, where the swift birds sweep after it in ever-changing curves. As though by magic, the face of the country, field after field, and farm after farm, becomes spun over with gossamer, millions of tiny spiders having contributed to the immense effect, as if by signal, each one its own tiny effort. On gate-post and hedge-top almost microscopic aeronauts stand waving their forelegs in the air as if to try the breeze, then shoot out their silken balloons and fill the whole welkin with drifting, rainbow-catching films. Again, the air is full of tiny creatures evidently supplying their own lifting power with rapidly moving wings. We have the curiosity to catch one, and it turns out to be a very small earwig. Another and another is the same, and it becomes evident that the countless host we see falling down wind like the ghost of a snow-storm is entirely composed of tiny earwigs. In what great nursery was this horde produced, what is the destination of the overwhelming majority marked for death, and of the very, very select minority destined for survival? At another hour the swarm may be of black flies, at another of little beetles; always at this time of year it is of a single species matured by myriads all in one

moment, and sent on a mainly ineffective migration to some place, near or far, down the wind.

The country is a mainly uninhabited and unvisited side of life in which something new is to be seen, even by the blasé, every day. But only on great days such as the First of September do those most highly qualified to enjoy natural phenomena find excuse to fall in the way of them. Luckily, there is no month more than equal to September in interest, from the nature point of view. The country is, in a wet season such as this at all events, at the best of its luxuriance; the subtler effects of lighting and colour, which the full light of summer banishes, now return; the weather, returning from sub-tropical to the medium weather of our clime, is enjoyable without prohibiting exercise; and life of every kind has the full abundance of summer, untouched as yet by the approach of winter. The killing of the partridge is a kind of harvest festival of which the observance has grown instinctive rather than formal. It is only remotely true that the Englishman says: "What a beautiful day. Let us go and kill something." What he would say if he spoke his whole mind is: "What a lovely day. Let us find some excuse to go and enjoy it." The partridge is an excuse.

THE GAME OF DEATH

A HOST of small birds have been feeding on the ploughing, the rear rank continually flying over the front, and then in turn falling to the rear, till the flock has somersaulted far out from the friendly hedge. Suddenly their activity ceases. The earth has opened and swallowed them up, or rather the heavens have disclosed a danger that bids them lie very still among the brown clods. High in the sky hangs a dot that every sparrow there knows for his ancient enemy, even though it may be a sparrow fresh from the nest, that has never seen a hawk before. But it is an awful business this lying quite still, hidden in sight, while overhead, with piercing eyes, hangs Death incarnate. One by one, and in twos and threes, the foragers slink off as best they can to the cover of the friendly hedges, and on one of them the hawk descends with unerring aim.

Has he taken the slowest or the stupidest greenfinch, or has he, holding them all completely at his mercy, made his swoop the penalty for excessive plumpness? Whichever it be, it can be only by a hair's-breadth that the little bird lost. It is as beautifully feathered, as long and perfect of wing, as plump and as fit as any other November greenfinch. Yet,

luck apart, it was somehow, by some very small margin, the least fit of to-day's flock. To-morrow, perhaps, the last one that escaped to-day will fall. It is not Nature's intention that we should escape our enemies by miles. We must win or lose by millimetres, and, whether we win or lose, Nature is equally satisfied. If we can give the hawk a reasonably good race for his meal, we have done well, and, if we are eaten, our cog has fitted the scheme just as well as if we escape. And is it not evident that what suits the machine suits every cog of it, whether it be an eaten greenfinch or a satisfied hawk?

We cannot find, on the whole, any evidence that Nature's tragedies are taken very seriously by the victims. At any rate, the friends of the victim, and even those who have escaped death by the smallest margin, are not much concerned, once the danger has passed. No more striking example of this can be had than the slight regard paid to the fox by the rabbits among which he lives, and from among which he takes toll when he happens to be hungry. When he is not hungry or hunting, he and his natural prey are as friendly as Englishmen and Germans when there is no war between them. Still more to the point and more easily verified is the careless familiarity with which roach treat the pike when the latter is not feeding, or the friendliness that exists in a narrow tank between a perch and the minnows provided for his sustenance. There is no unnecessary suffering from the fear of death. It would not do. The animal that was eternally worrying about such things would cease to thrive. It would be at a discount in the struggle for food—and when it came to die it

would not satisfy the scheme of things by being worth eating. The victims of the hot pot invented by Mr. Rider Haggard had to be taken at the height of their enjoyment, or the gourmets that were to eat them would not be satisfied.

It is death without a shadow. When the hawk appears in the blue, then it is time enough to fly. It is just a hot-blooded race wherein we have no time to think of the stakes. Any one who runs a race knows that all the anguish of it precedes the starting signal. At the firing of the pistol worry and anxiety vanish, and we find ourselves running unexpectedly well. It is not nearly so bad as we had thought. We are quite happy and comfortable, until the race is over and we have come in second. Then it strikes us that we might have spurted earlier and better, or have put an ounce or two more into it. The same would happen if the race were for life. We should run as gamely as any rabbit, and, if the race was a good one, should perhaps congratulate the victor as he proceeded to eat us.

It is sheer speculation? In our islands we cannot imagine the horrors of earthquake or, happily, of war. If we dream of them it is an insupportable nightmare. Surely human nature could not endure such horrors. But when we speak to one who has been through a war or an earthquake, it is much as though he had gone through a shower of rain. The crisis is accompanied by the right mood, and all goes off well. You walk about in the streets while the town is being shelled, but you lie down automatically when a shell is coming your way. In Piccadilly it would be an agony even to lie down, but in Ladysmith it is almost

in an ordinary day's work to have an arm blown off. If that is so for man, self-conscious to a perfectly absurd degree, how much more must it be with the animals, which, if self-conscious at all, must be quite healthily so? They can no more be as imaginative or so tender-hearted as we are than the back-woodsman can be physically as tender as the overcomfortable townsman.

The ignoble, unseen enemy of slow approach does cause the animal a sort of misery. There are few sadder sights than a diseased rabbit. It seems almost as though it must brood on its misfortune, an unjust and undeserved misfortune as the human sufferer usually accounts it. Job was more than human not to rail at his boils, which he knew or felt to be a wanton infliction. Yesterday, a mouse crossed our path ever so slowly, and when we caught it we found that it was afflicted by huge ticks as big in comparison as if so many rats hung and sucked on a man. It must have suffered days of misery, each as acute as the moment wherein a mouse is caught and killed by a weasel. It had never seen, perhaps not even felt externally, the things that were sapping its life. No other mouse could tell it what was the matter, yet we cannot doubt that here was carking, brooding care as unlike a run for life as the despair of a Chatterton is unlike a shot through the heart in a glorious breach.

We can bear the severest lot with fortitude and a smile, when it is the common lot and when it comes from an enemy that is entirely an enemy. Man who pities the animals, perhaps overmuch, for what happens to them in the open field, where the loss of one

is the exact measure of another's gain, has to deal with more terrible and more unjust conditions. The enemy of man is man himself. The tiger that eats him or that drives him from his food is not an animal of another make, but just a man of other opportunities. Neither his power nor his enmity is an actual thing against which one can fight, but a convention that he and the other victims of it must uphold and try to believe that they like to uphold. We need not say that it is so now. It has been so, and will be so again. Man has endured slavery at the hands of his fellow-men. He has been caught, fattened, and eaten by those whom with better or worse luck he would have fattened and eaten. He has been hived by the thousand like bees, say, on the Rand or at Kimberley, so that all the surplus the thousand could produce should be enjoyed by a single over-man. The game of death has been his, with not one chance in a hundred of life. And even under these conditions, consciously lacking justice or any sweetening counterbalance, he has not been aware of suffering. Why, then, need our greenfinch suffer when the hawk takes it for a meal?

MEMORIES OF SNOWDON

ABOVE the scant woods of Llanberis we toil a little way in the blazing sun, and then look back on the long lake with its hamlets on the near side. We turn again and again at intervals to view the same scene at increasing distances. The lake shrinks to the size of a bean, which it resembles in shape, and every house disappears. By that time we have another lake or tarn to our front. It lies at the foot of a precipice that seems to reach half-way up Snowdon, and the lake is apparently not so big as a lady's pocket-handkerchief. We wonder what size we should appear to some one enjoying the stupendous solitude of its eyried shore.

After us puffs and strains the mountain train. It overtakes us by about a yard in ten, when we are going well. It comes up as we do, footstep by footstep, planting the cogs of its driving-wheel each into the proper slot of the iron path prepared for it. There is not one of us who does not profess to abominate the mountain railway, yet we have sent up by it our sandwiches, our mackintoshes, and even a jacket, so that we may travel as lightly as possible. And as our legs lift foot by foot our flannel-clad twentieth-century bodies, some one asks us to imagine

what Snowdon must have been like to the Norman knights in their iron armour, getting up there to see if perchance there might be a catchable Welshman at the top. If Taffy was not at home it would be merely tremendous exercise, while if he was at home he would be perched on every available crag loosing big stones upon his visitors. Perhaps, in a thoroughly convenient place there would be a charge, with fierce shouts and the winding of yard-long cowhorns. An avalanche of spears, knives, and hatchets would clatter on the spent Normans and sweep through them as the river sweeps through an eel-grating, perchance breaking a bar or two. No wonder that the Normans learnt, as the Brut says, to "skulk about the open plains" instead of coming to fight the owners of the soil on their own ground.

We lift peak by peak as we gain the 'vantage of them foot by foot. Our weary limbs feel as though we really were lifting them on Atlas shoulders. But when, long after the half-way hut has been passed, our path springs across the *arête*, it flings open a view that takes the breath away. Brown mountains, blue mountains, teeth in the clouds, gorges full of purple gauze, smiling plains, farm-houses flung into the very jaws of geological anarchy, some of it matched on the side we have left, but every detail newly presented in one moment. There is a lake slung amid precipices for coolness to the eye, and a refreshing breeze blows up that side. If Snowdon ended here it would be magnificent, while there is another visible Snowdon yet above us, and a third out of sight behind it.

We can stand on the *arête* and view upon the right

our new world, and on the left our tiny Llanberis lake far under our feet. The path, in fact, prefers that we should still look back on our starting-place, though the sea-breeze still curls over the shoulder to encourage us to reach its full stream. Thus up and up to the sheep-fold, where our sandwiches await us by the side of a miraculous spring in this world of rock. There is just a pool like a small hand-basin. But it is full of pellucid water, and, like a Fortunatus purse, as often as you empty it, and no matter how quickly, it is full again from the perennial reservoir of the rock. If the mountain has been here twenty million years, surely the spring has been ten, and that leaves ample margin for supposing that its waters have refreshed and heartened all the heroes that ever trod Snowdon. Cunedda the Gwledig probably drank not here, for he was not like his grandson, Maelgwn, full lord of Gwynedd. If Athelfrith of Deira did not come here, his victory at Chester was barren. Cadwallon and Cadwaladr had dominion over this perpetual basin of water, while Offa, for lack of it, had to build his dyke from Dee to Wye. Gruffydd ab Llewelyn could survey from Snowdon a great part of his kingdom and his battle-fields in Herefordshire, Cheshire, Shropshire, and Gloucestershire ; but, alas ! the Saesneg Harold came here in turn, having learnt to fight Welsh fashion, and having almost the might of England behind him. Here sat kings and penkenedls, still legal lords of the lands the Normans had stolen from them, but only potent to harry their cattle and bring them here, whence the Normans were impotent to recover them. Cadwgan launched from here the war

that dispossessed the "French" of a hundred castles down to Tre Faldwin on the Severn, and brought Rufus himself to Snowdon, whence he returned "empty without having gained anything." Let us hope, at any rate, that he or his lieutenants enjoyed, as we do, a good drink at this crystal fountain.

From the top of Snowdon what a view! A dozen well-named peaks, each with abundant satellites, a score of lakes, like blue gems set in quartz-veined felspar, and green and purple walls. Mountains of England, Ireland, and Scotland, with the sea rolling over the lost province of Gwaelod; rivers taking back to Atlantis the mud with which other rivers constructed Wales. From here we can trace the route by which Hugh the Fat of Chester and Hugh the Proud of Shrewsbury came into Anglesey, where "they did not simply slay, but blinded and ferociously mutilated those of the native enemy on whom they could lay their hands." We rejoice to see Magnus, son of Olaf, standing off at sea, slay Hugh the Proud with a chance arrow, the instrument of vengeance of a "vindictive" Welsh saint whose shrine he had violated. There is Bangor, captured by John from his son-in-law, Llewelyn ab Iorwerth, "one of the most brilliant and capable of all rulers of the Cymry." Then comes the slow and paralytically thorough Edward I., who, by capturing "Mona, the Mother of Wales," starved out another Llewelyn, and definitely brought Wales into the kingdom. Nevertheless, the most brilliant page of Snowdon's history comes later, when Owain Glendower, aided by the comet, afterwards to be called Halley's, and by the inspiring songs of Iolo Goch, gave Henry IV. the trouble of

sending against him three expeditions, the last numbering a hundred thousand men. Owain Glendower certainly stood where we stand, or perhaps a foot higher than we can stand to-day. His mother and his family lived with him in the mountains, and his daughter was married to his prisoner Mortimer on Snowdon. These rocks echoed the wild minstrelsy of Iolo Goch, said to have been worth many hundred spears to Owain and his cause. We cannot help thinking, however, that Iolo's best theme was the hospitality at Sycarth and Glyndyvrwy, of which Owain somehow retained possession until Henry's third expedition.

We can think only of a few of the great events of which Snowdon has been not only the centre, but the only means. But for this jumble of hills, close-packed with such names as Beddgelert, Aberglaslyn, Bethesda, Carnedd Llewelyn, Wales would not have been the thorn or spur in the side of England that she has been. Nor would there have been quite so much valour, in all our battles from Crécy onwards, where Welsh blood has been mingled with English and Scottish and Irish as the price of victory.

To sing that glorious roll would be impossible. After all, mountains are mainly the endowment of their own people for their defence. They are endeared to us as ramparts of defence against the invader, and as sanctuaries in the more heroic wars, known as rebellions, that succeed political conquest. Perhaps they are in the most settled of times some sort of ultimate guarantee for political justice, just as infantry and artillery are the ultimate sanction for the payment of a civil debt. When the question is discussed

of Welsh tithes or Welsh disestablishment, these mountains take their silent, unobserved place in the scales. If they are not visible from Westminster they cannot be forgotten in Wales, while it is very difficult to visualise, from the top of Snowdon, London and its crowded millions, with twice the reputed weight in Parliament of the whole Welsh population. As for us, we are here just because we want to forget London for a while.

SEPTEMBER SUNSHINE

WE might parody an old gastronomic proverb and say, "The nearer the equinox, the sweeter the day." Back behind March, or beyond September, lies winter, but in the one case there is all the ice of the coldest months to thaw, while now we have all the warmth of summer to live on. To-day, the sun has early broken up the mist of a warm night, and, two hours before noon, is shining down with all the majesty of high June. The swallows that have congregated for weeks past on the telegraph-poles along the river are evidently wavering in their determination to leave us. Even the rat, who has been climbing the bean-stalks, using his weight to break them down, and carrying the corn to his granary, almost decides that after all there will be no winter. At any rate, he comes at longer intervals, and consequently carries fewer beans in the hour.

Now is the month of wings. The crawling, skipping, tumbling, quiescently eating life of the garden has attained the reward of waiting, and is now mounted on gauzy oars, that flash like screws as they propel the little aeronauts to and fro in the bright sunshine. The ivy blossom swarms with gross blue-bottles, refulgent green-bottles, wasps, bees, and an occasional butterfly.

Golden-rod, that plague of the Canadian agriculturist and glory of the English garden, has its crowded reception of smaller flies, as well as of every kind of kaw-fly and hoverer that the garden produces. Deep-humming drone-flies, first to make their appearance in spring, and the last to go under in autumn, are all over the flower-bed, but more especially patronise the large and solemn heads of African marigolds. Here they are joined by small tortoise-shells, red admirals, peacocks, and other butterflies, that sip and sip at the nectar, and wink and wink with their large wings, that we can never help thinking must be able to see, and when they fly, only sail deliberately and pleasantly from one flower-bed to another.

Beneath the golden-rod lurks the envious, unwinged, bloated spider, sitting in the midst of his web, and waiting till one of the revellers shall blunder into it and provide him with his next meal. All round the garden these fat spiders, sometimes red, sometimes brown, sometimes covered with pearl-like spots, stand out conspicuously from the bushes, as they sit in the middle of their webs. But one and all, they have a trick, the object of which is evidently to make them invisible for a while, when special danger threatens them. When you blow on them or touch them with a finger, they seize the net with all their feet and shake it very rapidly, so that they disappear for a moment in a whirl of vibration. On the cider-house across the yard a smaller and pluckier spider spins its web from edge to edge of the weather-boarding, for when a wasp blunders in it is not cut adrift as by the garden spider, but attacked and overcome by its tiny captor. Often another spider from the adjoining web

comes and helps, and it is a wonder to unco-operative man how the neighbour gets her reward. The wasp evidently belongs to and is entirely enjoyed by the owner of the web, and the act of the helper is dictated merely by a neighbourliness that pays because any other of the community is ready to do the same.

The humble-bees, as well as the hive-bees of the garden, are slow and heavy now, and even this bright day cannot enliven them. They fly with a "biz-z-z" as though their joints creak with rheumatism, but it may be only because their bodies are overgrown, and the work of raising them in the air is almost beyond the capacity of their wing area. The Maeterlinck of the humble-bee has yet to arise, but one sees in these large bees of autumn the possibility of a wonder that the hive cannot show. It seems as though the princesses now being reared, that they may go into winter quarters when the common bees die, condescend to help the community in the last days of autumn as honey-gatherers. The bustling little bees of midsummer have passed away, and the garden is full of drones, those unwieldy "biz-z-z-ing" monsters.

There has been in our garden for the last twenty years at least a race of truly all-black bees. In March the monstrous, glossy queen comes forth, and when her nest is established, smaller (but not much smaller) black and glossy daughters work among the blossom. This year their nest is in a mole-run on the bank of the croquet lawn. Seeing the blacks go in and out, with nearly one in ten faintly sporting back towards the original stone bumble strain, we thumped the

bank, and heard their angry murmur so close under the ear as to make us jump, thinking there was no earth between us and their thousand stings. That was a month ago. Now the all-blacks are as degenerate as any other bee, and scarcely use the old nest at all. Perhaps the queen bees of next year are simply spending a very lazy honeymoon.

What a far livelier affair is the ants' wedding-party, of which there is a small late one going on to-day! It is high holiday in the ant-hill when the winged ones go away. All the common ants in the place (and there are always plenty of them about) run up and down, hurrying the brides in the right direction, and mounting before them, with them, and behind them to the high vantage whence they are to fly. Off they go, dusky beauties a little veiled with their large, transparent wings which will be stripped off after this one flight. Every one gets to hear of the wedding, including such undesirable guests as the starlings, who catch up the principal actors in mid-air and thank heaven for a good meal. There is also a spice of hilarity about the going away of the wasps. The old home wears a noticeable air of decay, it is true, for the fruit season is far advanced when the event takes place. Nevertheless, there are other people about besides princes and princesses when the bridal couples go forth. The inquisitive stranger has to deal with an angry official or two if he comes too near. Two by two, the flower of the yellow-banded race come forth from the nest in which there are no longer any babies, and where there is, therefore, no longer any commercial activity. We can imagine that the ascent of each pair into the mild but palpitating sunshine is accom-

panied by a cheer on the part of the witnesses. When the last has gone, there is clearly nothing more to do than go off and drink the brides' health at the nearest ivy blossom, where the blue-bottles hastily make room for the martial last survivors of a glorious legion.

THE LITTLE LION

THE jungle of the mowing-grass might hold anything, from the young foxes that we know are not far off, to a wolf or a tiger or a snake far larger than the grass-snakes that alone have the right to chase frogs in it. On the other hand, it presents a convincing picture of brilliant, scented peace, from the blue shadow under the beech tree where we sit, to the mid-field in the sun, gay with marguerites, ragged-robin, plumed sorrel and crimson vetch over which the butterflies hang and play in company|with the ascending vapours of a hot day.

A tiny trout stream, tumbling down the hill on our left, seems to have spurred the jungle into a supreme effort. The horse-mint has sprung up so as to hide the little tributary from the ragged-robin bog, hemp-agrimony is four feet high towards the great reeds that will bear flowers of crushed strawberry for the red admirals in August, bishop's-weed has shot up its hollow sturdiness, from column to column of which the convolvulus weaves its airy loops. A blue bugle standing in a phalanx on the other side of the stream nods a little more strongly than it should under the mere pressure of a humble-bee, and, a few seconds later, a small quadruped puts its fore-feet upon the rail that spans the

ripple between one waterfall and the next. It is a destroyer and a taster of blood come into this scene of peace—a weasel bearing in its mouth a little bird that may be a fledgling whitethroat. He pauses a moment, as though to take a better grip of his loot, then leaps on the rail and begins to come across the stream. When he sees us, we say, he will be so startled that he will fall in the stream. He will lose his prey and have to make off empty-handed. He does see us, when a little more than half-way across, but it is only to raise his head and glare a moment from his phosphorescent eyes, then to move a little more quickly over the remainder of his tight-rope and disappear in the horse-mint almost at our feet.

It would be useless to follow him, even were we blood-thirstily inclined. As we sit silent, it is probable that he watches us from some coign in the tangle, unseen. We could feign the squeak of a distressed rabbit and call him from his jungle. He would pop out a round, inquisitive face, standing on his hind-legs to do so, and if we squeaked artistically, he would jump nearer and nearer till we could, if very agile, knock him down with a stick. But our weasel is a little king of the field that we are not anxious to kill. He is not as the rats, at once cheap and horrible on account of their abundant numbers, nor is he a mad tyrant like the stoat, a senseless reveller in blood that must be stopped if anything else we prize is to remain alive. He scarcely derives dignity from his relationship with the stoat, fitcher, and marten, for the weasel's courage is the equal of theirs, and the deeds of prowess to his credit quite as notable, size for size, often almost so without regard to size. On the other hand, he

belongs to a nobler tribe than the fox ; he is even on the steps of the throne of the king of beasts. The fox exists in our country notably on sufferance. The vixen whelps in a kennel that we provide for her ; if an accident of the hunt befalls her mate, we bring her another, even from Siberia ; we put down dead rabbits for the young cubs, and take care that they are not all killed at cub-hunting.

The weasel is not a make-believe wild animal. He lives where he will and how he will. We rejoice to see him clearing the wheat-stacks of mice, but he only stays there so long as he has not other fish to fry. In the winter-time we were near a wheat-rick, and saw a mouse sitting on a thatch, palpably trembling—a most eloquent object of fear. The next minute out came the head of its arch-enemy, and the mouse, gaining the rare privilege of the use of its limbs, leapt to the ground and made off. As a rule, the limbs of the weasel's prey refuse to work when the inevitable death draws near, and the spectacle of the rabbit squealing and dragging its useless legs, while the weasel runs up and administers the *coup de grâce*, is very familiar. When next we saw the weasel, he was too near the chicken-yard, and we took a stick to slay him. He ran and got into a dry wall, from the cracks in which he glared at us with lustrous eye, and even thrust out his impudent white chin, as though to ask us whether we really wanted to fight. Later we saw him on the wall cleaning himself carefully and thoroughly, his slim length doubled upon itself like an unusually supple kitten. When our observation became a nuisance, he trotted off. The weasel has not the dandified airs of the stoat. He does not sport an

ornamental tail, but just a working organ. There is no black brush at its tip, nor is it a whit longer than you would expect for an animal of his size. It is just an apt termination of that long and sinuous body of somewhat the same colour as his great relative, the lion, with a throat-streak of white that does not run to an extravagant width, and ear-tufts that have not sprouted beyond the limits of efficiency. The weasel is the perfectly dressed fellow whose garments are almost unnoticeable. He keeps himself clean without difficulty, and smells like a bit of clean Harris tweed, whereas the fitcher is a good deal too catty to be pleasant.

We have often wondered whether it was we ourselves that brought the weasel to the homestead. Certainly there was a box-trap set in the spinney here, not far from the trout stream, and in it one morning was a weasel. The box was full of concentrated weasel-smell, and the prisoner was dead—stone cold and stiff, but, in the faint hope that he might be alive, we carried him home, and left him on a garden-seat while we went for a spoonful of brandy. At the end of three minutes the seat was clear, and we never saw that weasel, to swear to, again. Then came the wheat-rick weasel and the weasel of the dry wall. Later, we had shot a wood-pigeon, and were waiting to see if another would come, when a weasel came whimpering up the hedge, like a small hound in full cry, hot on the scent of the dead bird which lay beyond. The next weasel day stands in red letters. In a thin bramble-bush under the larches one ran from a mole-run, followed eagerly by another. They disappeared right, and almost at once another popped

his head out left. Then a fourth in a new direction, and for a few minutes the little bush was alive with baby weasels, playing an undoubted game of hide-and-seek.

We have often wondered what would have happened if we had managed to seize one of that playful family. A number of recorded cases make it fairly certain that, at its shrill chatter of rage and fright, the whole clan would have attacked the enemy, running up his huge limbs, and seeking to do him most vital damage about his throat. A man might laugh at such an attack, but a child would do well to drop his captive, and make off at the top of his speed. No rat has that family instinct. The mother rat will rush on death in defence of her young—so will almost any warm-blooded mother—but there is no other British animal that has the character for tribal fealty that belongs to the stoat and the weasel. In his little lion-coloured body the weasel has more than the lion's tenacity of purpose. You can drive him from the rabbit he has killed, and, while his blood is up, he will come again and again to carry it off. Sometimes, while you pull at one end, he will pull at the other, bracing his tiny legs against your tyrannic strength, and muttering through his clenched teeth the maxims of fair-play that you are violating. So, wherever we can afford it, we will let our valiant little lion of the mowing-grass go his own way. At any rate, we will not kill him on a glorious summer day while he is fending for his young family.

THE MODERN HEN

IN the rickyard, which now contains but a few slices of hay and one straw-rick from last summer's store, the fowls are scattered in search of the self-hunted portion that ekes out the day's allowance of corn. The farmer's wife does not know exactly how many fowls there are. Some thirty or forty she says, and they produce now about twenty eggs a day. Still harder would it be for her to say which are the best layers. Only when a hen goes persistently broody does she begin to think that the farm might be as well off without her, though even a dozen broody hens are sometimes tolerated with quite Christian forbearance. The layers, too, in a general way, are permitted to lay what sort of eggs they like. "An egg is an egg," runs the country motto. A small egg is supposed to contain as much nourishment as a large one, and no difference in taste has been discovered between a brown one and a white one. The higgler can by all means have the large brown ones if he will, for the poor things in the town who set store by such things.

One evening last week the fox took one of our hens. We know that it was a white one because we saw the feathers in the field, so there must be a white

hen the fewer. We cannot say that her absence makes much difference, if any, in the weekly tale of eggs, nor does it occur to us for one instant to make any difference in the amount of corn we scatter for the flock. It is a quaint flock when it is assembled. We cannot say what the breeder of some pure and fantastic strain would say if his eye could roam over it. Long ago, perhaps, the Brahma was king in this poultry-yard. Then a lordly Dorking brought fresh blood and new hopes in the heart of some bygone farmer's wife. There are rumpled top-knots that proclaim the reign for a space of the all-conquering Houdan ; beautiful feathers that owe their origin to a gold-spangled Hamburg or wild Ancona ; tumbling combs that speak of the day when Black Minorcas were the rage. To-day the White Leghorn is the prevailing type, and the flock no doubt, if the truth could be known, lays better than ever it did. Next, the latest champion winter layer, the Buff Rock, will probably have its day as soon as a sitting of eggs can be procured.

The ups and downs of the poultry-fancier's world go to prove that, just as surely as an egg's an egg, so a hen's a hen. It is likely that within a year we could send up from our mixed flock a pen of pullets that would lay against all the pure breeds that at present fight for the highest honours. Certainly we have known individual nondescript hens that would lay in a given time one-sixth as many eggs as one of those pens of six. On the other hand, the fancier could get from our yard a new scheme of feathering which he could work up into a breed that would perhaps excite the envy of all other fanciers. The

more he elaborated its "points," the more, in every probability, he would spoil the fowl for all the purposes that has made it valuable to the farmer. Again, the farmyard can take the most monstrous of fanciers' productions, such as the maypole-like Langshan, or even the Japanese fowl, with sickle-feathers nine feet long, and can make something of it, as the public school makes something of the boy who has been ever so quaintly brought up. Even the degenerate, from the utility point of view, may give fresh vitality to the farm-house breed. The fanciers have strained off into separate phials the various elements of fowldom. Each essence becomes by isolation so attenuated as almost to lose the power of reproduction, yet so precious in the eyes of the fancier that he will not give it the stimulus of new blood that it needs. Then that vandal, the utility man, takes two of these valueless treasures, and, mingling them, produces, perhaps, a fowl worth having.

It is to the Utility Poultry Club that the chief credit is given of having rescued the fowl from a false specialisation at the hands of the breeders. It is the first not very articulate voice of the farm-house protesting against a fancy that had ignored the table for the show-bench. The Orpington and the Wyandotte must now maintain supremacy, not by means of an ever-widening differentiation of shape or feather, but by increased egg-production, precocity of growth, or capacity for fattening and bearing flesh. Even now, however, the farmer is not certain to get what he wants. There is a danger that the new crack layers may be over-elaborated for the one contest under

conditions that are not reproduced in every-day commercial life. It is the examination system applied to hens, and, just as we are for ever coming across efficient men who were duffers in examination and duffers of prizemen, so there are, no doubt, disappointments in store for the poultry-man who buys too blindly the offspring of champion layers. We suppose that the proportion of eggs that will produce healthy chicks must be smaller than in the case of a normal layer, and in many cases the tired organism of the over-layer would take a very reactionary rest in the next generation. Then the hen that lays with the fury of these champions lays only for one season. She must be replaced in the second season, and it may be that the cost of rearing an increased number of chicks must be set off against the advantage of getting even fifty per cent. more eggs per laying hen per annum.

We almost hope that there may be economic reasons against the undue driving of the hen. We no more like to think of the farmyard population renewed every year than that the "hands" in a factory must be "pole-axed" at the age of thirty to make room for more paying material. We like to see the grandmother and great-grandmother sunning herself in the straw with her latest foster family, or taking a turn at the laying for a few weeks each year. We cannot believe that the hen of a certain hundred and fifty eggs per annum can lay really good eggs. We call upon the public analyst to report on this matter, and we say beforehand that if he finds the sweated egg as rich in food values as the other we shall take leave to doubt him. Certainly by far the best eggs we

eat seem to be those that come from the drowsy, happy farmyard, where a hen seems to be regarded as "a hen for a' that."

We do not kill the goose that lays golden eggs. If we did we must not expect it to furnish a dish as superior to common goose as its eggs were to common eggs. There are egg-laying hens and table-hens, and the tendency is to make the one more and more useless for the other purpose. We are not at all sure, however, that the veriest egg-slave may not be as good to eat as the specialised, crammed Sussex fowl that Londoners have to eat. The fowl has a remarkable faculty for converting barley-meal into flesh of sorts, as the goose has the faculty under highly artificial conditions of providing five times the ordinary amount of liver. It is a crucible, not a chicken, that is pumped up with food because London is in a hurry for roast or boiled. The stuff is only half converted, and is almost as much like the raw meal as like finished flesh. But even in the fattening trade the healthy life of the farmyard chick is vindicated. None but the common fowl can stand the cramming—the fowl that as a sign of health clings to the original red livery of its wild ancestor. It is so here and it is so in America. The "Sussex Red" is one of the oldest breeds, and whether it is one that has escaped being bred for colour, or whether some one, despairing of his black breeds and his white ones, poured them together, with atavistic results, cannot be known. It is an honest fowl, a good layer in winter and in summer, a breeder of healthy and hardy chicks, a maker of white and wholesome meat, a triumph of wholesome farm breeding. By

its own route America has evolved the Rhode Island Red. It might sing, if hens did sing, "Cochin and Malay, Wyandotte and Leghorn are we." It is, in fact, as a reaction from many excursions into fancydom, just a hen. We hope that there will still be a place in the world for our commonplace all-round hen. We hope that the spirit of drive will not descend too fiercely on our quiet straw-yard, where a hen that is neither a mere egg-laying machine nor a mere barley-meal-converting machine is permitted to take life a little leisurely, to enjoy a dust-bath, to carol that lazy "Awk—awk—awk" that makes its haunt the most restful place on the farm.

STONE-DWELLERS

UNDER the footbridge the stream runs dark, then plunges sparkling over a sill of brown stone into a pool some five feet below. Where the ripple of the fall ceases, the water becomes clear as glass, and we can see everything that is in the pool. The everything seems nothing—except brown stones in the shade, growing into orange stones in the sunshine, with wreaths between them like very faint smoke to show where the water runs. A stranger would say there was nothing whatever in the stream but water running its barren way to the sea. The roots of the willow-herb are bathed in it, and a mighty luxuriance shoots up. It is crammed now with thousands of flowers in freshest, brightest pink, starred with light yellow pollen masses. The faint scent of "codlins and cream," like apples gently cooking, makes the way of the bridge very delightful. Willows and alders faithfully mark the course of the stream far below, for water is water the whole world over; bees and butterflies come to the willow-herb and hemp-agrimony; and a band of long-tailed tits swing in the alder close over the pool, but in the pool itself there is no life.

If we will take our shoes and stockings off and do

a little wading, we shall see. The first step in the cool water (the first step that costs) removes the years wonderfully. The fingers itch for the stones instinctively, and, before we know what we are doing, we have got a grip beneath one of them, and it begins to come up—gently, gently, while the stream carries away the little bits of brown stick that have lodged there. The stone is over, and there are a whole lot of shrimp-like creatures lying on their sides and helplessly kicking. Yes, of course, we should have expected water-lice even in a barren stream. It is a quaint definition of barren, and it is a fact that a neighbour came here and caught a few pints of these water-lice wherewith to stock a stream of his that lacked them. He could not keep trout until he had established the "shrimps," and after them the trout came almost spontaneously. Neither are these all "shrimps," for a may-fly larva slides away down the stone into the water, the cases of caddis-grubs are among the little sticks that the stream carries away, and a grub like a fringed worm hastens to cover itself with a little stone beneath the one we have lifted.

We expected more than water-lice, but there are better stones to be lifted. A large one near the lower end of the pool is scarcely touched before a flat, spotted head shoots out. Because it moved we saw it, but the spots are so artfully toned that, while at rest, the fish is almost invisible among the similar markings of the floor of the brook. Secure in its livery, the fish suffers itself to be driven into the open, and then we cautiously surround him with two hands and scoop him out. You never see the miller's-thumb without going into the water after it, and driving it

from under the stones. Yet it is armed well enough against its enemies in the huge spiked gills which it can stick out almost as furiously as the father lasher of the sea. A water-rail was found here last autumn, choked in the attempt to swallow a miller's-thumb.

More warrantable is the hiding of the loach, called stone-loach because of its very retiring disposition. It is smoother than a gudgeon, and sweeter too, as any fisherman knows who has offered it to pike or perch. It has no defence except an unusual slipperiness, and it squeezes beneath stones in such a manner that its capture by hand is far more difficult than that of the miller's-thumb. Our stream also holds in plenty the crayfish, or fresh-water lobster. The big ones have holes in the bank, where they are ready to nip shrewdly the fingers of boys who come to tickle trout. But there are lots of little ones under the stones, as ready as their elders to nip when they cannot escape, but not so able to hurt. They are made exactly in the image of the lobster, and use their feathered tails to grip the water under the body and shoot off backwards as rapidly as a fish darts. In spring the elder female crayfish carry great bundles of eggs under the tail, for other crayfish are great eaters of ova, including those of trout. A few years ago all the streams running into the Thames, right up to the farthest hills, partook of a Thames epidemic that carried off the crayfish almost to the last one. Slowly they came back, and may be as numerous as ever by now. Our stream starts just over the Thames water-shed, and its crayfish were immune from that epidemic.

The side of the hill is strewn with stones as thickly as the orchard with apples. As we lie there on one elbow to admire the view and to meditate on many things, the other hand idly picks a stone from its bed in the turf. There are hundreds of black ants in a series of grooves they have constructed beneath it. Heaps of cocoons that were there when the light broke in are melting like sugar in water as the nurses carry them down to a lower room. A flying ant tries to take the opportunity to elope, but a worker clutches her and drags her back. The next stone, by a coincidence, has red ants, and under another not far away are the sickly, puny yellow ones that, in spite of their small size and poor spirit, manage to build greater mounds than any of the earth-building ants. Here we are, like Asmodeus, surrounded by a perfect city of roofs, each one of which we are at liberty to lift for the inspection of the inhabitants beneath. Here is one so large and flat that it could cover a trap-door leading to Ali Baba's cave. That or some other treasure is beneath it, and with difficulty we prise it up to find merely a wire-worm of a species we have been seeking for years. It is one of the best of places for hunting centipedes and millipedes. The coleopterist, too, can often find a rare thing under the right stone.

Once we found a mole's nest with young moles in it under a baulk of timber. The place was unusual, but so handy a roof often covers the nest of a field-mouse. You may, in such a situation, suddenly expose an entire wasps' nest, tearing off the top paper and bringing the whole population about your ears. So there is a spice of adventure connected

with stone-turning. Once we saw a labourer lift a stone and drop it suddenly with white face, while he called out, "A gurt snake!" We went to look, and found nothing but a toad squatting in a hollow that just fitted her body, and was just so deep that the stone could not crush her when it was replaced. On another day we found what we scarcely appreciated at the time, and what we have vainly looked for again ever since. It was a big black amphibian that, when we touched it, shed its tail, and the tail kicked and kicked for hours after whenever we touched it with a stick or threw a crumb of earth on it. Newts of every kind are found under stones, or, better still, under fallen posts. The triton is big and black, his orange breast not counting for much when he is on land. But the triton has not a brittle tail, so our big black newt or salamander remains unidentified.

The lifting of a stone is the short cut to the dwelling-place of nearly everything that burrows. If the stone is large enough you may find a fox's earth beneath it, or it may cover the viper in its winter sleep, or dormant queen-wasps. Every boy knows that there is no need to dig for worms when there are plenty of stones about, and the soil and weather are not too dry. So, long ago, we found worms' eggs there, and many other things in the embryo stage that it was hard to identify. Another memory of non-digging excavation that cannot be repeated was the finding of a new ants' nest in the branches of a box edging. A suspicion of mould peeping out through the leaves tempted us to open the stiff twigs, and there was the whole ant city. Not only

280 THE ROLL OF THE SEASONS

were there plenty of cocoons, but nearly half a pint of Canterbury Bell seed that the industrious insects had carried down from the stalk of the campanula, along the garden path, and up into the top of the box edging. That is what we found that day and in that garden. Since then, books have told us that no British ant lays up store of seeds. We did not know the treasure that was flung at us without the trouble of digging, exhibited face-high for us to examine as one examines a prepared specimen in the museum. That is one of the ironies of natural history—that the rarest of creatures “occur” under the noses of tyros unable to appreciate them, while the professor hunts high and low for a lifetime and misses them.

THE SECOND SUMMER

THERE are, as the flowers tell us very well, more than four seasons of the year. Not perhaps so many as twelve, but after autumn and winter, say, two springs and two summers. In February begins the spring of the colt's-foot, the blackthorn, the daffodil. In April comes the extravagance of primroses, hawthorn, and bluebells, with the exquisite pinking and snowing of the orchards and the decking of the garden with laburnum, lilac, and, lastly, rhododendron. Let June and July be devoted to the rose alone, though she is queen over an almost countless court. But possibly our gardeners have done her a disservice by prolonging her bloom into August and September, which have blooms of their own more distinctive than the flora of nearly every other season.

There is a deliberateness and a grandeur, a mellow-ness and a completeness about the early autumn flowers that do not belong to the others. The colt's-foot and the garden *Petasites* are in such a hurry to bloom that they come up all flowers and no leaves. Crocus, daffodil, tulip, and hyacinth show you the blossoms they intend to open, as soon as the leaves with which they will make blossoms for another year.

282 THE ROLL OF THE SEASONS

The buds of hawthorn, apple, laburnum, and even the rose can be counted almost as soon as the leaves unfold. Theirs is not so much a growth as the unfolding of what has already grown. Loaded with the inheritance of last summer, their work of this year is very much the provision of ready-made blooms for the next. As they hurried to their opening, so they hurry to their seeding, lavishly shedding honey for the strictly business section of the insects, then as soon as possible dropping their petals and getting on with the business of fruit-making. The succession of species deceives us with an impression of gaiety, but the mood of each one of them is feverish anxiety. Goldsmith's gorse, "unprofitably gay," is, perhaps, the greatest hustler of them all.

It is true that the business of every flower is the same, but by comparison with any other time August and September are Flora's holiday months. The story of nearly every flower in the garden now is different at every point from that just written. The annuals have been slowly elaborated from seed, and are far more apparently the work of this single summer. The leaf first, without the least sketch of the blossom that is to be; stalk and whorl, branch and more leaves; then, according to the success of each individual plant, the planning, the laying down, the growing, and the unfolding of the blossoms. That is the end. When it is achieved there is, as it were, a little time to enjoy life. There will be time for the setting of the seeds, which need not be planted much before the winter frosts. Insects are now so numerous that there is not much object in

barring out this one or attracting that to a specially contrived honey-jar. Bee, fly, wasp, butterfly are welcome to come and enjoy with the flowers this evening of plenty.

The queen of the August garden is assuredly the phlox. It has not been hurried into the thousand shades of the rose or the sweet-pea, partly because it cannot be budded or annually selected from seed, partly because it is of more constant nature. Nevertheless, its hues are well varied, none of them striking us as unphlox-like, all looking well in the cellular bunches of unbroken colour that make the flower so distinctive. We like those without very distinct eyes best, and best of all, we think, the white. But a long avenue of pink or "scarlet" or salmon colour is as fair an epitome of the August garden as heart of man could desire. At the risk of repetition we would assert here that a large part of our love for the phlox is accounted for by the miraculous way in which its blossoms annually appear at the ends of the apparently barren shoots. In July you could swear that never a bud will come between those two close-pressed leaves that end the shoot. And then there comes bristle after bristle, like angels standing on the point of a needle, and a bunch of bloom that you could not encompass with two hands.

And there stand the tall hollyhocks (or should it be holly-oaks?) plastered with rosettes of colour that last day after day without fading, a never-ending feast for the humble-bees—a joy to the gardener. We have written that with a little hesitation. The hollyhock stands on the verge of banishment from many gardens. Its memories do not appeal to us in the

winter months. Its big leaves take up a lot of room in the summer, and then we listen rather easily to the sneers of the cultured against its ungainliness. The hollyhocks come up without our care and in spite of our disapproval, and then in August they recapture our hearts just so much as to make us say that we are not sorry they have come. As a matter of fact, if we can love them it makes us feel young, and that is everything. But we know those who perceive their own love for the hollyhock, for whom the horticulturist produces new varieties every year, and who make of its tall masts not merely the essential finishing-touch, but one of the most beautiful features of the autumn garden.

The sunflower has not been so much cultivated, though, judging from what has happened to the hieraciums of the same natural order, there may be triumphs in store. The butterfly-lover cannot be without the sunflower, whose jolly round face is the rendezvous of all the autumn beauties that fly. It is not complete without a pair of red admirals winking their broad wings upon it, while an envious humble-bee and some drone-flies wait impatiently in the air for their roomy magnificences to go off elsewhere. For frank handsomeness you need not go beyond the red admiral, but the pentstemon has a guest whose visits are far more precious. We do not see it come, so rapid is its flight, but we suddenly see it poised before the flower on wings that move so rapidly that they are invisible. There is the speed of a bullet stored in those wings, but the insect manages to let out so much only as to advance it or withdraw it a mere tenth of an inch, so that it is

exactly distanced for reaching its tongue to the bottom of the flower's tube. Then it vanishes as it came, as though the light of a magic-lantern had been cut from a screen. No better name has anything than this, the humming-bird hawk-moth, whose flight so closely resembles that of the bird beauties of tropical America that Brazilians have declared that they have seen humming-birds in England.

The summer is not a lost one that can bring a humming-bird hawk-moth to the pentstemons in August. Some have said that the butterflies have all been drowned. No doubt we have seen on a day such as this more small tortoise-shells than there are now on the African marigolds, but we can find an excellent reason for that. Hark! There is the hot-weather "click" of a peacock's wings. He sails disdainfully over our once irresistible border of sweet-scented stocks, of lavender, of bergamot, veronica, Michaelmas daisy, golden-rod, shrubby spiræa, and is lost in a distant part of the shrubbery. There we find him by no means alone. The buddleia of two years' planting has a tangle of canes about four feet long. Every one has more branches than a hand has fingers, and every finger is a foot-long spike packed as tightly with lavender-blue blossoms as an ear of maize with corn. As fast as the base withers, the tip lengthens, and the flame of blossom crawls up the stalk till it is utterly consumed with beauty. There is a whole month's entertainment here for all the butterflies in the county. There is a reek of nectar in the air like that of an open beehive, and it has served so well that surely all the butterflies

in the county are here. Red admirals, tortoise-shells, peacocks, brimstones, not the winter-stored specimens that come almost as thickly to the fallow blooms in March, but spick-and-span butterflies of the year, spreading their magnificence on the tessellated spikes, or towering in the air in furious fight, or sliding through the sunshine from one vantage to another. All this splendour, in some respects an unusual splendour by comparison with former years, has come out of the cold, grey days that week by week displaced our rose-summer. Out of the unripened wood of last year, out of the rank, sappy growth of this, quite the usual magnificence of the second summer has come.

REVEALING NIGHT

THERE is light behind us as we leave the house for a tramp on the hillside. It streams beyond us, and shows us in the faintly silvered grass a stroke of blackest charcoal that we know stands for a trench. We feel for the other side with a stick, and, nevertheless, the foot comes down with a jar, because, in so dim a light, it is impossible to judge distance correctly. How will it be when the light is withdrawn and the black velvet of night is all round us? Black as it seemed it proves sight-yielding. It tricks us into seeing many things that we know cannot be there—converting outlines of trees into haystacks, bushes into men, desperate footpads ready to commit murder for our purse, a newly broken log into a prone body with staring white face, a cattle-byre into a ruined church of unusual beauty—yet revealing our whereabouts somewhat as through a guide speaking Greek. These outlines and broad meanings of light and shade we cannot see by day, for detail eclipses outline, and colour confuses all estimate of shade. Day darkens as well as night. Night enlightens.

The things seen now, and not seen in the daytime, may seem a small thing. Not so the sharpening or extra gratification of the other senses. Is it because

the eye is working at a lower focus that the scents of night are far more certain than those of day, or is it that the moisture and the velvet of night keep them in a thicker stream and purer? Surely, not only is our best smell of autumn the nutty odour of fallen leaves, most companionable now, but we perceive, as though for the first time, that there is one smell of elm, another of the tan of oak, another of hazel, another of maple, whereas in the day we can scarcely tell the difference between larch and beech. And here, at the foot of a clay bank, is the reek of leaves fast turning to mud, and here in the grip is the trail that a fox has left in the air, and through it there comes from the orchard side the acid message of the cider they made a good month ago. The must from which they squeezed every drop of juice lies there in a heap, perhaps for winter fuel, and even three months hence we shall get that acid smell on a favourable night, though it is not there, or passes unheeded, by day.

The soft brush of our boots on the grass, and the suck with which they leave the clay, prevent us from knowing just how silent the night is. When we stand still, it is as though a clamour had ceased, then we find ourselves listening as though for the fall of the proverbial pin. It comes in the crackling flutter of a leaf in the next tree. Then we hear the rush of the breeze that, in fact, scarcely fans the cheek, and the lift and fall of a bramble-bush responding to its almost infinitesimal pressure. The roar of a railway train comes five miles, and its whistle makes as clear a streak on the silence as the hoot of a tawny owl from the wood a hundred yards away. Then out of the unheard comes the mellow common time of a horse

trotting with a carriage behind it, though the wheels will for a long time be unheard. He is three miles away when we hear him drop to a walk at a slight hill, an indulgence that brings up a mental picture of the whole turn-out—low-wheeled dogcart, fat, middle-aged horse, comfortable farmer rarely pressed for time, well tucked behind rugs, and probably with his spouse beside him. The trotting is resumed, and after a while, just as we almost imagine the sound of wheels, the equipage turns at the cross-roads and the sounds recede.

Though there is no moon, and the stars are blurred in the canopy of cloud, we have become quite at home in the field when we plunge into the comparative gloom of the wood. Light trickles with some freedom through the leafless boughs, but among the hollies there is the very abysm of night. As we touch their stiff skirts there is a flutter in the recess that, absurd though it be, sends the heart into the mouth. It is only a small bird disturbed in its roost. It gives a drowsy chirrup, and we cannot make certain whether it has gone up towards the stars or has put its head under the other wing and gone to sleep again. A belated fallow buck sounds his challenge not far off. It is like the rattling of antlers on branches, or the instrumental music that the great spotted woodpecker makes in spring, but there is an undoubted vocal quality that only that larynx-knotted throat can give.

We do not imagine, as once we did, that it would be easy to follow up the sound and get a view of the champion. His other senses, like ours, are sharper, and his eyesight not less keen by night than by day. He changes quarters as silently as the owl, and we soon

hear his stammered cough from a point deeper in the wood. A fallen log gleams, perhaps with luminous fungus. No; there are two obvious round eyes, which waver for a moment, as though some one swung a lantern with two holes, then spring to the ground and vanish. Some cottage cat out after a wood-mouse or less legitimate prey. Or, perhaps, she belongs to the charcoal-burners, the incense from whose smoking mound has long floated through the wood. We expected to find the mound itself, with its writhing smoke-serpents occasionally breaking out into dull flames. But we have to confess that we have somehow lost our way in the wood. The journey is far from familiar, and even the landmarks that might be known by day are obliterated or, worse still, so it seems, altered into something else. There is a reflection of the grey sky below us on the right. It may be the eye of a pond far away, or a sheet of chalk quite near. We cannot even tell whether this at our feet is a mere path or a deep trench with mud and water in it. When we stoop and grope it seems as though the elves had suddenly changed a yawning ditch into firm ground. In a minute some other equally ludicrous problem presents itself. We creep from one perplexity to another—like a fox in the midst of traps.

Again it is some other sense than eyesight that tells us where we are. A louder throbbing than that of the pulse proclaims a motor-car, and, ergo, the high-road in a direction many points farther to the north than we had thought. Swinging to the left we get the smell of water, and the eyes seem to feel rather than see the thinness of timber that signifies

the lake. A single clue has resolved a profound mystery into clear knowledge. A spell has removed all the enchantments of the forest. A broad path comes from the underbrush where it had been hiding, and places itself under our feet, so that we march downhill as fearlessly as in daylight. But what is that rushing, rasping sound behind us like the scales of a big serpent scraping the ground? Merely a sycamore leaf sliding and tumbling before the breeze. Surely so small a noise would be quite imperceptible except in the velvet of this dark night.

Long waves come out from the middle of the lake and stealthily fall on the shore. When a long white ripple runs in among the willow-stems we think of the otter that puzzled and a little terrified Bevis and his friend in Richard Jefferies' immortal camping-out book. There are few things so mysterious and full of possibilities as a wave of which we cannot see the origin. We remember how, on such a night as this, as Jessica said, we rocked, half dreaming, in a drifting boat, heard a new ripple approaching, felt ourselves rock as something seemed to grip the gunwale, and then saw with relief the face of a friend who had fancied a swim, with our boat as the objective. Nothing comes of the ripple in the willow-stems except the drowsy voice of a mallard, as though he had whispered encouragement to his startled mate. From the other end of the island, three tinny syllables call up the picture of a sheldrake's knobbed vermillion beak, for it was he undoubtedly that spoke. The naked trees, now the hollies are passed, make the rest of our woodland walk little darker than the fields. But among the yews and other evergreens

in the garden the shadows are almost without a ray. Then the door, and a flood of light that in a moment blinds us, deafens us, and makes speech itself like a thing to be learned over again. So must the owl or the bat feel when suddenly plunged into the blinding darkness that we call day.

THE UNNECESSARY BROCK

LET it be brock, because that was its undoubted name to our Celtic stock, and because of the great uncertainty as to the origin of the name badger—some seeing in it the badged or striped one, others the corn-stealer, and others no more than the animal that is caught in a bag. Moreover, the brocks we speak of lived in the Doomsday parish of Brockawardynge, which thus proclaims itself their very ancient home. There are many other parishes in Badge and Brock within a ten-mile radius, though some of them have ceased to give doubtful sanctuary to the persecuted animal.

For a year or two past the brocks had held their sett in the brake above the first field from the house. There seemed to be no reason why they should not. It was a pleasure to catch very occasional glimpses of their shy forms stealing about bear-like in the summer dusk, and we never saw signs of their occupation of which we had much reason to disapprove. An occasional rabbit-stop opened from above and emptied of its young did not matter much, for rabbits were still more than plenty when there was mowing-grass to be nibbled, and abundant enough when ferreting-time came round. And when

the "bears" found a wasp-nest, as they often did before it had come to our notice, we had nothing but approval for the scientific way in which they cleaned it out with the minimum of damage to the fair rotundity of the cave that had held it. We never knew that they had taken a partridge's nest, and perhaps if we had we should not have allowed the glamour of the word "game" to make a few pounds of bird's flesh outweigh a badger's right to live. Honouring, for peace' sake, the convention that bids us preserve the far more destructive fox, we did not see why the less fashionable brock should not also have asylum.

Two springs ago our badgers in the brake produced cubs, an event that added to the interest of their occupation, and only slightly hinted at the time when there might be too many of the species on the farm. When last winter's bedding had been thrown out and spring cleaning accomplished by removal with it of the whole floor of the den, a new way was trampled through the young bluebells, and the beginning made of a new sett about two hundred yards away. But soon the work was stopped, and, as all the badgers returned to the old sett, we knew that there would be no young this year. It seems, indeed, to be a rule with the badgers to have young every second year, and, in spite of some authorities to the contrary, until a new family is expected the yearling cubs frequently inhabit the parental cave. Four or five brocks, the farmer decided, were no great matter. Let them stay. When another litter should come he would reconsider the question.

The farmer has not reckoned with the claims of

"sport." He has not made allowance for those who like to kill badgers, in the words of Mr. W. T. Dymond, "for no earthly reason but the unreasoning love of destruction, which classes us as a race on a level of the worst type of negro." To-day a party of sportsmen, mainly hailing from the town, have come out to celebrate beautiful weather by killing badgers—not ours, but the inhabitants of a big sett at the edge of the wood on the neighbouring farm. It is an ideal badgers' home—a sett that may have been occupied with few breaks since the time of the Conqueror, or longer. Under the oolitic brash of the district is a bed of soft sand, in which, as one of the hunters says, with slight exaggeration, the badgers can move as easily as a fish through water. Only a good terrier can hold them while the men with spades dig down. But the best of terriers are here. The foxhound officials take more than a sporting interest in the extermination of badgers, for, though *Meles* and *Vulpes* generally agree pretty well, when they do fall out there are apt to be some fox cubs the fewer. The huntsman likes to kill off the cleanly, industrious brocks, and give their habitations to some vixen that, after her kind, has fouled her own earth. So he joins the digging-out party with his terriers, the disreputable, smooth-haired one whose face is all scars and the dandified, long-coated one that does not look half so good a dog as he is.

The main entrance to the sett enters the lower part of a mound on the hillside that looks like an ancient barrow. The hole dips and the mound rises so that in a few steps the terrier is far below the surface, baying the invisible inmate. We listen with the ear

pressed to the ground, and then the spadesmen drive a shaft straight at the noise of the barking. We find the hole, but the badger has moved farther in. There are galleries one below the other, the lower at a most uncomfortable distance. As soon as the brash is pierced, digging is as easy for us as for the badger, who, moreover, cannot dig for fear of leaving his rear exposed to the dog. But the depth beats us, and we have to give the matter up. As we depart, the mound presents the appearance of a giant fist thrust from the hillside, clenched palm downwards, and guarding the aborigines of the district within its grasp. We have gashed its knuckles, deeply torn the hand, but it still shields its guests.

And now the clearest claims of country courtesy ordain that the badgers in the brake must be delivered up. Here are all these poor sportsmen gathered to celebrate a fine day by killing something. Here is the official of the sacred foxhounds out after the enemies of the fox, his terriers with bloody faces to avenge, spadesmen with cider to earn. Where is the true country gentleman who, having badgers, will fail to let us have at them? The badgers in the brake are sure prey. They have foolishly dug in hard clay, wherein the spade is greatly superior to the claw. The sand they love is not there, only a sort of iron-stone sand that is little softer than stone. If the farmer gives the invitation—and let anyone who knows the country dare to say that he will refuse it—the fate of his brocks is sealed.

The rough-haired terrier, his dandified look long since gone, runs excitedly into the hole. He wakes a badger scarcely a yard within, and bays him almost

under a hazel-stool. The place to dig is soon found, but the shaft not so quickly sunk. It is tremendously hard work, with the autumn sun streaming down on the diggers' necks. We have all, more or less, to take a hand, and even the watchers are beset with a prickly heat. Through the thin screen of hazel-stems can be seen, a few fields away, the smooth gleam of a lake to tantalise us with its offer of a cool swim. Yet the men like this hard digging best, for it makes them certain that the badgers cannot have gone far. In four or five hours we catch sight of the tail of the terrier signalling every move of the fight that is engaging him. The musky smell of his angry antagonist fills the spinney, and every one knows that blood is about to reward our exertions. Soon the tongs close on the victim and drag him forth. He is proclaimed to be "a nice little brock of twenty pounds." *Was*, no doubt, a nice little brock when, in tune with his surroundings, he gambolled through such an evening as is now coming on. But there is nothing very nice about the tumbled, shaggy pelt hanging on a limp, dead body. It begins to strike one or two of us that a live brock may be, after all, better than a dead one.

But "sport" drives us on. There are obviously more brocks in the hole. The terrier, disdaining a dead enemy, has gone back to earth, and is furiously engaged in a new fight. The digging is renewed with fresh vigour. Soon another of the cubs comes to light—dead. The narrowness of the clay sett and its own defensive effluvia have slain it, for no dog could harm it at bay in its native atrium. One of the grown brocks, weighing half as much again as the cubs, has

also escaped the indignity of being caught alive. The sow and two other cubs come to light fighting. The last one breaks out and makes a bid for life, running off backwards almost as fast as the dogs can go forwards. But they catch him and pin him. He turns in his skin with consummate ease, and cleanly nips a piece from the rough-haired one's shoulder, marring his dandy beauty for life. But the last of our brocks is slain, leaving, now that we think of it too late, a sad gap in the fauna of the farm. The master of the brake says little, but perhaps thinks hard. The hunters think he should be consoled for any injured sentiment by the honour of having provided the record of five grown badgers drawn from one hole.

WATER-FOWL IN LONDON

ONE of the most delightful water pieces in the world is the pond that receives the overflow from the Serpentine. At the far end, as we look up the water, the overflow drips or dashes down dark, moss-covered rocks, that gleam with the cool moisture among bamboos and other growth, meeting high over an alley of water that broadens to the main pool at our feet. The sun shines through a gracious rift in the fog, bringing up the velvet of the grass lawns, and the precocious pale green noses of the butter-burr and other foliage of next year's spring. A gorgeous mallard, in the full glory of his new plumage, is sailing to and fro, a fleet in himself, to maintain the mastery of his little sea. On the bank nearest us a duck quacks angrily at him, using all the bad words in her vocabulary to let him know what she thinks of him. A second, more favoured duck quietly explores the recesses of the finest nesting-site in London.

The drake endures the termagant on the bank so long as she remains among the butter-burr. But when, presently, she crosses the water, he pursues her up the meadow and back to her tribune. Later, he catches her in the pool, and, driving at her neck-

feathers with remorseless bill, forces her to fly off to the Serpentine. Then he sails up the alley to his own duck, and announces that they are alone once more. A very few minutes later, two specks in the blue air, far up towards Kensington Gardens, enlarge rapidly to flying ducks that, wheeling in a fine spiral, drop with a splash into the coveted pool. Again the drake in possession propels himself furiously after them, and again and again, as successive pairs arrive. Sometimes he ungallantly attacks the lady, whereupon the drake rises and follows her in her flight, sometimes with equal efficacy and more glory he falls foul of his rival mallard. The fight with endless variants can be seen almost any fine day, even now, with cold winter close ahead of us, and many weeks before a town duck begins seriously to make her nest and raise hostages to the rats.

Poor as is the ordinary bird life of London, this group of water-birds is susceptible of delightful study, for many of them live a semi-feral life in our parks. They lighten the gloom of mid-winter by putting on full early their nuptial finery, which is more striking in the ducks than in nearly every other family of birds. Before the peacock on the bank has more than half regained his train, the tufted pochard, affectionately called the diving-duck by his many friends among the people, has emerged from an all-over dinginess into brilliant black and white, the white panelled vividly into his side, and the black iridescent with purple. And from the back of his head hangs down a jaunty tassel, as if he were wearing a smoking-cap of Turkish pattern. His still dowdy consort wears a replica of his old plumage, and marks the extent of the transforma-

tion. We are never weary of seeing them swim about together, almost as often under water as above it. Particularly pleasant is it to watch them from some bridge, when the divers can be seen dashing about under water, with all but the velocity of fish, then suddenly popping brilliantly out from the veil that the water had drawn over their beauty.

A quieter scheme of colour is effected by the pintail, now fortunately often to be seen in our parks. The clumsy sketcher soon realises the inimitable grace of the whole contour, from the neck made to look more slender than it is by an artful white line, to the long pointed feathers that complete the sweep of the body. The delicate browns and milky chocolates that take the place of more prominent markings in most other ducks make the colour-scheme of the pintail a more lasting delight than that of nearly all the others. Then we have the shoveller that, incredible as it may seem to the uninitiated, generally passes muster as a mallard, with perhaps a little more white on him than usual. He is one of the most luxurious of drakes, never being seen without his plain mate, content to paddle in his wake without asking whither. Their large beaks earn for them the discriminating title of spoonbill. The effective shovelling they do with them makes us wonder why every duck in the lake has not infringed the patent long ago.

The red-headed pochard usually goes among children by the affectionate name of "coppernob." His cloak is a quakerish dove colour, his muffler a brilliant but respectable black, and his bright "carroty" head always looks as though it had been freshly shampooed and machine-brushed, so fiercely stands up each par-

ticular "hair" upon it. And his beak has beyond doubt just come from the wheelwright, who has painted it and varnished it with his choicest vermilion. "Coppernob" is a flirt. His muddy-headed wife has much to put up with, so have strange ducks, victims of attentions which their furious lords are powerless to prevent. Like the mallards, the red-headed one has the use of his wings, and it is common to see a distracted drake labouring along overhead, in a vain effort to follow all the turns of the abductor and his fickle lady. Last summer a red-headed pochard settled down at St. James's Park as the accepted mate of a common duck. Two drakelings issued from the union, and they have grown up remarkably handsome hybrids. Instead of the well-known green head of the mallard theirs are a rich plum colour, with a fiery gleam in the high lights, faintly reminiscent of their sire's captivating hackles.

One of the noisiest of our London ducks is the sheldrake. Every now and then a shrill and rapid series of quacks, addressed to his mate, draws the eye to his bright red, beknobbed beak, and his sharply contrasted plumage of chestnut and white and black. He and his mate do not produce in London, or at any rate not abundantly, those fluffy spotted ducklings that make merry the solitary coves of the Scottish coast, but his very early spring plumage and his lover-like antics are as wild and natural in our smoky town as the best of the other ducks. The golden-eye is the most grotesque wooer on the lake. Sometimes he seems ashamed of his black head with a white powder-puff on each cheek. He throws it right back till it

touches the back of his tail, thus bringing into almost ridiculous prominence his snowy breast, which he thrusts under the eye of the seemingly indifferent duck. Then the head comes back from its retreat, and the neck is stretched upward to its extreme height, only as a preparation for a renewed effort to tuck it completely beyond the tail, and to bring the last feather of the breast into view.

There are many other equally interesting ducks to be found in a morning walk through the parks. We have said nothing of the widgeon, the teal, the common pochard, the ruddy sheldrake, nor of any of the geese that are usually represented. We are inclined to dip beyond the British list, in order to call attention to the American summer duck, and its congener, the mandarin from China. The latter is assuredly the most brightly coloured and quaintly decorated of all the drakes, and the fussy and gallant way in which he marshals his mate about makes him one of the darlings of the lake. He takes kindly to our climate, and in many an English lake-centred wood would make his nest and lead forth his ducklings to the water. So would he grace any farm duck-pond, provided he were not placed in too close proximity to boisterous neighbours, for he is ill adapted for a rough-and-tumble life. With apologies to the ducks, let us also mention the moorhen, whose amatory battles now begin. They fly furiously after one another, thrashing the water with their hanging feet, or run hump-backed on the bank, neck stretched forward and red beak menacing. But, best of all, is to see two cocks that really mean business facing one another on the water. When they are near enough,

they sit back and thrust out before them their long-fingered toes, then dance splashingly up and down on the water, employing very much the same tactics that our gallinaceous birds use. In a few weeks the sequel to their wars will be seen in the shape of jealously guarded nests. They begin the summer betimes.

FOUND AT THE ZOO

"Now let us go and see the elephants." Having just seen the diving-birds fed, they would drag us at the gallop down the slope and under the tunnel. It is of no use trying to show them that the bees have bitten holes in the comfrey blossoms and are sucking the honey out at the back door. That is not one of the things we came to the Zoo to see. The bees are not in cages, neither have they been turned out of cages, like the squirrels or the crested doves that nest by the capybara's paddock. Sparrows in an empty monkey-house, or mice running in the hippopotamus-den are amusing, but we draw the line at the bees and the flowers, the latter occupying such spaces as ought to contain the jabberwock and other animal celebrities at present unrepresented in the collection.

So we have to content ourselves with the discovery of things that have been put into the cages as exhibits, but are, as it were, "hidden in sight." Nothing could well be more conspicuous than a well-grown white bear in a cage measuring ten feet each way, the front all bars. He is artfully obliterated, however, by the rival conspicuousness of two white bears next door but one, dripping with water and about to plunge again into their pond. No one looks at the solitary "polar,"

except here and there an imaginative child who thinks it a shame that he, too, cannot have a lovely plunge-bath. Under him is painted the discouraging word "hybrid," and lower down in very small print "three-quarter polar and one-quarter brown." Ah, there is his secret! Not merely is he a hybrid, but the descendant of a fertile hybrid, the browner mongrel in the next cage. The mark of a natural species, says the anti-Darwinians, is the sterility of its hybrids, the limitation of domesticated varieties, their fertility when interbred. Our polar bear with a brown streak on its back compels them either to say that brown bear and polar bear are one or to forgo a favourite argument against Darwin's theory of the origin of species.

"Hidden in sight" is a favourite game in the insect-house. We have many times seen a visitor look into a cage and declare it empty, when it has contained twenty or thirty stick-insects. By the kindness of the keeper we hold one of these in the hand. Even to the touch it seems a stick with smaller sticks glued to it by the edges for legs. At one end the dead wood has apparently been broken off roughly. The older the insect is, the blacker and older seems the wood of which it must be made. The young "sticks," in shape exactly like their parents, court or defy destruction by waving their tails over their heads like scorpions. Probably their agility saves them while they are young; their resemblance to inedible morsels when they grow staid. The keeper, having enjoyed our wonder at the stick-insects, shows us his land-crabs. He points out that one claw is larger than the other, that being the one most used for feeding. Then, in

answer to a question, "Oh yes, it is always the right claw that is bigger." He is roughly right, yet of his four crabs there is one left-handed. "Why, so it is," he says; "I never noticed it before."

Some have gone to the Zoo many times without seeing the Tasmanian Devil. A short time ago the label said there were three. As we passed then, there came from within the shed blood-curling howls as the Devils played together or quarrelled over their meal of live babies or what not. Now the three is crossed out, and a two put in its place, while one stiff-jointed, big-headed, blear-eyed, bored, dog-like creature totters out from the shed and stretches himself in the sun that flecks his yard. Poor Tasmanian Devil! How fallen from the picture we had of him when, out of sight, he contributed to that chorus of really horrible howls.

After such disillusionment we hardly dare go and see the Tasmanian wolf. He is asleep as usual, but a keeper consents to call him. Gasping a shriek of protest, he bounds out. That monosyllabic yelp is ten times more thrilling than even the howls of the Devils. It hangs in the memory like the last cry of a drowning man. And this time the creature matches his howl uncommonly well. He might be the caricature of a wolf executed in clay by some artist of India whose art we know leans towards the horrible. He is a gaunt wolf, a long-bodied wolf, with long sharp jaws, large eyes whose mildness instead of detracting from his fierceness adds to it. Then, having made this wolf in the likeness of Chiche-vache for lean voracity, the artist has added the cruel treachery of the hyena by painting stripes across its loins. Only take care,

artist, that you do not overdo the horrible and make your friend ridiculous.

The intervention of the keeper was once needed in order to see two promising young otters. But now they have been put into the pond, where they play all day like water-kittens, next door to the foxes that, by standing on the top of their bank and looking hard over the heads of the people, try to imagine that they are in the midst of a moorland solitude. There is another animal in a den here that must be routed out in order to be seen, an animal labelled with the unstimulating name of "Common badger (var.)." But he is to the badger-lover an astonishing specimen. All that is black on an ordinary badger is sand-colour in these two from Rutland and Staffordshire respectively. Truly a delightful "var." of the common badger.

There are two ways of seeing the squirrels. One is to take pea-nuts or other delicacies and walk round the enclosure, followed by the lithe mendicants. Another is to stand there quietly and witness their manœuvres with the floating capital that is already theirs. One has a pea-nut in its mouth, which after much reconnoitring it pretends to bury twice or thrice, then really buries it, smooths the grass over it, and leaves the place as nonchalantly as possible. He has been closely watched, however, and has scarcely gone a yard when another pounces straight on the cache, digs up the nut, and pretends to eat it. But he in turn only buries it again after several feints, and thus the game goes on.

In the reptile-house there are some tenderfoot rattlesnakes from Texas. They are magnificent serpents,

nearly six feet long, and the charm of them is that they do not yet know all about glass. When we put our hand close to one of them he draws back his head by looping about a yard of his person into a figure-of-eight. It is so evident that by releasing the springs he could dash his fangs even into our face that we hesitate to try him further. The heart comes into the mouth as we and he face one another—he a practised poisoner and we but a soft-skinned amateur in every grade of wild life. He, in his certainty that glass is nothing, mesmerises us into the same belief. We draw respectfully away, and he disdainfully uncoils and moves on about his business.

Another of the Texans is busily rattling. We can see the instrument quivering so rapidly that its outlines are blurred, and by leaning very near the glass we can hear "the rattling terrors of the vengeful snake." They are but the whirring of a grasshopper. "Why does he rattle?" asks a little girl of her uncle, and he has the prudence to think well before he answers. Surely the main purpose of the rattle is to lure insect-eating birds within reach. As the bird comes nearer, the tail quivers more, and the grasshopper seems to the bird more and more real. Then, when the snake is about to strike larger prey, or an enemy such as man, still the tail quivers, and the second man, if not the first, converts the allurement into a warning. Sometimes at this Zoo there is an ally of the rattlesnake that points this theory with convincing force. Instead of a rattle, its tail ends in a white, scaleless point nearly two inches long, which wriggles and crawls just like a white maggot or grub. The grub, like the rattle, is in the middle of the snake's

coils, and guarded on the outside by the watchful, death-bearing head. Midway between the rattlesnake and the maggot-tailed serpent stands the rat-tailed. That is still represented in the collection, its equipment hard to find a use for, but offering just a shred of hope to the evolutionist on the look-out for an organism in the making, yet not of any use till it is fully made.

THE BOY AND THE WILD

AT the entrance to a London park, a merchant humble-bee, flying home with her load, was caught in a shower and flung to the ground. The showers of autumn are chilly, and the poor insect lay paralysed on her back, her legs feebly clawing the air, and she accepted very gratefully the tip of a finger to climb upon. Then there was a clatter of nailed boots, and three or four boys came up—of course, to sneer at the sickly sentimentality that should help a stranded "bumble-bee." Not at all. These lads of Camberwell were genuinely sympathetic, and insisted on seeing the waif safely to a sunny perch on which she might recover from her shock.

At the same time, we know a country parish that is always scoured in every hedgerow for blackbirds' eggs, for which the Sparrow Club has offered blood-money. Even without that incentive there would be hunting for nests, and even here and there that brutish and senseless amusement indulged in of seeing how many eggs you could hop upon blindfold. That game, however, is rapidly dying out. We cannot even remember definitely its name. Was it "blind hookey," we wonder? We can just remember having seen the rules of it printed in a book of games de-

signed for the upper-class schoolboy. What would young Eton say to blind hookey now? It is purely a game for the clods, and even they have, happily, almost given it up.

Still, in the country there is much crudity, if not brutality, in the general attitude towards things animate and their belongings. The helpless frog or young bird runs rather a poor chance when it meets one of our rougher country lads. There are many, including some quite old enough to know better, who, on walking over a caterpillar or beetle, instinctively change step, so as to crush it. The commonness of life makes them indifferent. There are so many beetles, what does one, more or less, matter? The suggestion that each beetle is to itself the only beetle would be scoffed at as unthinkable, should it ever present itself. To take an egg from the nest, blow it, and thread it on a string, is to enjoy an egg in the only known way. The other day we saw a girl lean over a park railing and feel a great head of crimson saxifrage, its stalk and the leaves from which it sprang. Poor thing, she had her full excuse, for she was blind. A blind generation must handle and maul, annex and destroy, every pretty thing it sees. It remains for a rising, and perhaps a town, generation to get higher and more rational pleasure from them.

To the town lad, suddenly transplanted to the country, there is an awesomeness in every wild thing he sees. He cannot conceive that he has a right, legal or moral, to destroy them, whereas the country boy, blunted by familiarity, destroys them without reference to right at all, the escaped chameleon or

GARDEN
WARBLER.

SONG THRUSH.

CUCKOO.

TREE PIPIT.

MISTLE THRUSH.

CHAFFINCH.

NIGHTINGALE.

CORNCRAKE.

REED
BUNTING.

BULLFINCH.

SPOTTED
FLYCATCHER.

GREAT
TITMOUSE.

SPARROW HAWK.

CHIFF CHAFF.

guinea-pig alike with the wild rat or rabbit. To the town boy, the weasel stealing through a hedge is a fellow-inhabitant of Paradise, and he is likely to watch it, as a new boy does a prefect, to see what it will do. And in a week, perhaps, he knows more about weasels than the country boy has learnt in twelve years. His advantage comes partly from the freshness of the experience, partly from the more alert attitude of the town mind, and partly from the new way of looking at things, which has not yet made its way in the country. In America, where new, high-pressure towns are dumped in primeval forests, a similar freshness of outlook seems to have produced a greater friendliness for the animals. We remember the keen bargaining between Huck Finn and Tom Sawyer for the first click-beetle of spring, or some other creature, brought into school, and the "School of the Woods" style of natural history flourishes because it is grounded in healthy, popular instincts.

It does not need two generations to open our eyes to the possibilities of the wild. The country boy, who has spent a few years in town, is ready and yearning to read the old fields like a palimpsest, with much the more valuable document underneath. It is like the yearning that we have for just one day in school, with our grown intellect, and a boy's chances for combat with the master. We have heard a few things about trout or dragon-flies that we don't wholly believe, but which we are anxious to verify, or otherwise. We have seen some of the "kill-'em-at-sight" animals in the Zoo, or walking about uncommonly tame in the parks. We have broken the bread of friendship with them, and can never look

upon their like with quite the same feeling as of yore. We have learnt that the over-vaunted town is only the country at second hand, a detritus for every speck of gold in which there is a vein somewhere in the upland of its origin. We want life at first hand, not merely the life of a cottage among green fields, but of a tent pitched far from human habitations.

In the last aspiration the country youth joins his town brother. Every country boy, worth his salt, has at some time or other, with greater or less determination and success, run away from home and attempted a habitation in the wilderness. In America it is more done, because the contrast between wild and tame is sharper. There are such vast areas of no-man's land, where we can play quite effectively at savage life—streams as unfished as Robinson Crusoe's lagoon, eggs that really fill an egg-cup, wild fruits that will make a sustaining meal. Yet, with all these advantages, the American writer has not produced a boy's book so fascinating as Richard Jefferies's "Bevis." Bevis and Mark had only a Wiltshire pond, which may have been a brick-pit, and can scarcely have been a lake, with an island in the middle on which to camp, but the author, drawing, doubtless, on his own memory, filled the book with a series of adventures and enterprises that thrill each juvenile reader, and stir in him a determination to go and do likewise at the earliest opportunity.

His enthusiasm stimulated by the new school cult of nature study, his activities corked down by the paucity of the field in which he can ordinarily exercise it, the town lad expands with energy and keenness when at last he gets to the country. We knew a

country lad who thought to induct a town visitor into rural pursuits. He showed him some specks on his fishing-bag, telling him that they were scales of a fish he had once caught. "Yes," said the town boy, "and I see they came from a perch." He had taken the trouble, never dreamed of by his cousin, to devote five minutes to learning the difference between the scales of a roach and a perch. The stimulus that can lead a boy to make such observations for himself cannot be an unuseful one. Neither can it be wholly external. Neither, we admit, does it often achieve so much as in this case. One of the keenest young naturalists we know is the son of one of the new small-holders, a real "back-to-the-lander"—that is, one who returned after a whole generation spent in a town, one who, by direct experience, knew nothing of the soil, but whose country instinct had been quickened by the increased mentality that town life can give.

Our young friend walked round the school museum, and found that the schoolmaster and his class of country boys had mislabelled many of the commonest objects of the country-side. It was he who, paddling in the brook and not heeding a nip or two, discovered that the crayfish carries her eggs about with her till they hatch. It was he who added not a few birds to the list of local inhabitants that had for years been considered complete, and it was he who opened a quite unexpected source of interest in the doings of sundry solitary bees and wasps. Again, having tried the matter by sundry painful experiments, he could tell you with certainty which bees are able to sting and which cannot. But, much as he excited the

admiration of his schoolfellows by the unerring way in which he selected the non-stingers, he could not raise in one of them the desire to learn his secret.

The joys of natural history, as they appeal to the rare youth who discovers them, spring from many sources. The books carry you in this science a very little way. They loose you then on a field that contains endless possibilities for original research. Most of the things you discover are matters of great certainty, whereas human affairs reek with convention, and are governed by exceptions more numerous than rules. But the greatest charm of all is that we never know what is the next thing that is going to turn up. In this respect the boy is on a level with the most scientific of naturalists. Neither can control the beasts of the field ; they can only make the most of them when they come. Nature is most ours when we have quarrelled with all mankind. Many of the writer's best boyish discoveries were made at times when he had wandered away from his fellows definitely because they displeased him, and at such times there is no peacemaker like a new bird's nest or a beetle with a new trick. The peace of these woodland interviews passes all description, if not all understanding. It is just ourself and the universe, ourself not standing for a negative quantity, but for the dearest and most interesting person known to us. Philosophy tells us that all the external objects are impressions, if not creations, of our own internal sense. Yes, but other human beings seem constantly to object to this theory. It is we who are the foreigner. The wild creatures do not so clash with our dominant personality. We can talk to them,

give them human attributes if we like, but they cannot animalise us. The individual soul is at home in the wild, at rest there as completely as at a circus, where there is no necessity to be aware of one's neighbour, and you have only to wait for the next funny or exciting thing. We are going nowhere and nowhither. We have forgotten our name, the year we live in, the date, the time, the place. It is simply "here" and "now." Everything is real—and everything is ours.

THE OLDEN FARM

A WICKET-GATE in an arch of the stone wall admits us to the curtilage. On one side the velvet of the lawn runs up the grey walls of a Tudoresque mansion ; on the other an opening in a hedge of yew gives a glimpse of parallelograms of kitchen-garden, with masses of sweet-smelling wallflowers and espalier lattices of apple trees and long rows of celery. White fantail pigeons strut on the broad gravel walk at our feet, and a tortoise-shell cat, with broad white bosom, blinks at us from a sunny window-sill. The porch is as large as the average suburban sitting-room, and would scarcely disgrace a country church. It keeps the weather from an oaken front door, and that admits us to a hall and oak-balustraded staircase, that, except that it is obviously all its own, might be a copy of Haddon Hall. Through cool, sweet passages that seem to have just done echoing to the whisper of sandalled feet we reach the living-room, probably twenty-four feet long and sixteen wide, with ceiling half as high again as it is in most modern houses. We have seen such proportions in modern houses in Holland, but rarely in England. The walls are panelled in oak, and the ceiling striped with oaken beams.

We have but come into this grey stone palace, echoing with the whisper of monks' feet, to buy a pound of butter. Just beyond that old-world kitchen-garden and grey stone wall with the wicket-gate, the cow-yards and calf-houses, long empty of their winter population, are being set in order for the winter that is surely on its way. You may find not a few such farm-houses in a day's walk, mansions such as the idle rich would build only for themselves to live in to-day, and from the proceeds of a business fifty times as lucrative as this four-hundred-acre farm. They are so unconsidered as buildings that it would cost many thousands to replace, that the farm lets or sells for just about the same figure, whether it has one of these manor-houses on it or a mere mean-dimensioned farm-cottage. But they are an eloquent testimony to the power there was in the old British agriculture to support a generous life by comparison with which much of our modern trade-fed existence is squalid and petty.

A wall or two of our farm-house is truly Tudor, and may have belonged to some small monastery secularised at the Reformation. The spirit of the old architecture has been fairly conveyed to the main structure, most of which is probably two hundred years younger. The lords of the manor who lived here lived just as truly by agriculture as the gentleman farmers who insensibly succeeded them, drawing no tribute, as do modern lords, from rubber and cotton and the thousand arteries of oversea commerce. This is the palace of a self-contained and self-sufficient kingdom, and it is to be remarked that

still the air of sovereignty descends upon the present tenant occupier. The rooms are furnished with solid mahogany twelve-foot sideboards, with four-post bedsteads worthy of a *lit de justice*, with great oak settles and gargantuan tables in the retainers' quarters. Their inheritor through several generations, having weighed the butter, sits at the table and discusses the laying powers of her poultry with the knowledge of one who wields the actual selective power of life and death over them. The sense of false security which pervades the modern world does not bid her garnish her homely speech with affectation. She knows that she is in her throne-room, or, if you will, safe by her husband's right arm, within her keep. Him we met in a yard, a slim young man, dressed for convenience in a long smock, and lending a lone magisterial hand to the rehanging of a gate. Some would prefer to see here a portly proprietor in the garb of Plutus, with hands deep in jingling pockets, regarding with proud approval his respectable gargoyles.

Modern wealth and modern worth, it seems, must jingle. They are unrecognisable in woolly flocks and lowing herds—though these were once the universal coin of wealth, and gave its name to the blessed word "pecuniary." In the time of Henry VIII., it was stated in an Act of Parliament designed to promote tillage in England that "Some have 24,000 sheep, some 20,000 sheep, some 10,000, some 6,000, some 4,000, and some more and some less," and that yet the price of wool had nearly doubled. Wool at that time was the word of England's commercial greatness, and its chief profit went, not

to the spinner and weaver, but to the farmer. The area of the farm kingdom where sheep ran by the ten thousand was necessarily large, especially as that was more than a hundred years before Houghnot, writing of new things, said: "Ten acres sown with clover, turnips, &c., will feed as many sheep as one hundred acres thereof would before have done." Tillage, vainly enforced by Act of Parliament, now came in by its own advocacy. Two hundred years ago, the practice of soiling or cutting and carrying green crops to the cattle was widely used in England, whereas now it is nearly extinct. It is well-known to American farmers, and is the backbone of Danish intensive culture. The mark of Jethro Tull is on all our fields, but nine-tenths of the ridges and furrows are clothed with permanent grass. It is popularly imagined that the high price of one farmer's product, wheat, was to account for that widespread ploughing; it is more likely that wool first stimulated it. At any rate, the ninety and a hundred and twenty shillings a quarter of the years before Waterloo could not be reaped without the intermediate clover and "St. Foin," and the ministrations of sheep and cattle, and it was probably a better time for the farmer when wheat was half that price and meat had risen, so that there was a steady profit on every course in the rotation. At any rate, in the 'seventies, when wheat had fallen to £2 15s. a quarter, rent was higher than when it was at £5 and £6.

The unambiguous story of this palatial farm-house is that bygone farmers employed plenty of capital, and knew the advantages of tillage. The story of

Denmark is sufficient to show that in a Free-Trade country all was not lost when the people got cheap corn from America. There is a tradition in the writer's family that an ancestor bought land at £50 an acre, and reaped its cost in the first year's wheat harvest. Oh those golden days of agriculture! Yet only two years ago, it is said, some one here bought land at £15, and reaped its cost in the first year's harvest of sainfoin seed. Certain it is that if you buy land and leave it under grass you will have to wait many years before you pay for it out of crops. And many a farmer finds it difficult to pay a rent, even much reduced from the Crimean level, out of grass. The Crimean rent was not so much a fifty-shillings-a-quarter rent as an intensive-culture rent. As it happens, the country of these frequent large farm-houses is a country of arable farms. The lightness and thinness of its soil make it easy of cultivation, and obviate the costly expedient of frequent summer fallows. The same quality prevents its successful laying down to permanent pasture, and thus extends into every field the beneficent sway of clover and mangolds. At the same time, not yet will men build again such generous houses out of the profits of farming. Just as the little weavers, once tributary to the farmer, have been supplanted by the great wool mills, so the opposite process of disintegration tends to bring down the farmer from his proud position. In place of the great man, secure within his keep, and drawing by means of abundant capital abundant income from wide fields, we have had the tenant skimming a livelihood from wide and rather neglected grass lands.

And now intensive culture is to be brought back by putting single fields into the hands of men who, cultivating them by their own labour and with the help of co-operation, will win from them each his own individual living. That, indeed, is a great improvement on the best that is gone, as we should see if we inquired into the lot of the labourers ultimately responsible for farming profits.

THE SEEING EYE

THREE hundred yards away on the white road a bird shows as a mere pinprick. It has but to hop once, however, to be known infallibly as a chaffinch. The eye soon learns a feat so easy as that, but in a lifetime its owner could not say what it is that makes the hop of a chaffinch so different from all the other passerine birds. Nor can the sportsman say how it is that he knows a pochard from a mallard when it is but a dot of flying pepper in the sky. It is fair to assume that every creature has not only the anatomical and feathered differences upon which the man of science relies, but some separate manner of carriage, trick of deportment, or other result of unique ancestry by which it can be known. It is a great thing to be able to distinguish between finely marked species from dried skins in a drawer or from a bit of bone or the stone mould of a bone that was alive a million years ago, but surely we get a little nearer the essence of things when we know a bird by its manner of wiping its beak on a branch or a bee by the way it probes a flower.

The triumph of the field-eye is perhaps at its height in the man who knows his insects. There are pairs of species so minutely different in colour and pro-

portion that even the most highly trained of cabinet entomologists can hardly name them. But in some cases their difference, not of habit in the usual sense, but of manner, is so marked that the open-air man can tell them apart by their flight or by the way they walk on a flower. The late Mr. Saunders had never seen alive a little black bee called *Dufourea vulgaris* till, on the first of August, 1881, he took a bee at Chobham, of which he says : "The flight and behaviour were so peculiar, as it wriggled itself into a flower, that I knew at once I had caught a rarity, and remarked to my companions that I believed I had got a *Dufourea*. I also hazarded the remark that it was ten years since it had been taken. When I got home and looked up the former record, it was ten years to a day." Rare as this bee is, there are probably a thousand people who have seen it romp into a dandelion blossom in that unique way, without being aware even that they had seen a bee. There are millions who cannot distinguish between a wasp and a hornet. There appeared one morning to two ladies in the writer's house a mealworm wriggling on the carpet. One described it as a goat-moth caterpillar, of which one had once troubled her by crawling on her leg. The other said it was a "lucky farmer," or larva of the fox-moth, with which she had been quite familiar in the preceding summer.

Yet the eye sees faithfully the vast differences between the mealworm and the goat-moth caterpillar, and the smaller ones between the chiff-chaff and the willow-wren. To take in and perceive what the lens throws on the retina is not, as the saying is, to train the eye, but to train the understanding. The pith

of the book of nature is between the lines and in the foot-notes of descending tininess of type, while we are usually content to read only the large print. It is nothing that a red butterfly should settle on a green leaf, but it is immensely interesting when the eye brings up from the brown of a tree-trunk the brown wings, with bark marks on them, of a moth with crimson under-wings. It is nothing to see the black rooks swinging on their conspicuous nests in the tree-tops; it is something to find that one of the mottled sticks among many others on the floor of a wood is a night-jar brooding a pair of still more invisible eggs.

We cannot use our eyes out of doors without learning to appreciate the sight and the understanding of those more nearly concerned than ourselves with unravelling the mysteries of mimicry and protective coloration. Much the same picture is presented to the lens of the bird as to ours. The greater attention of the bird to what it sees is evidenced by the depth to which mimicry has had to go in order to defeat it. The stick-insect is discovered and plucked wriggling from its bush, if its resemblance to one of the twigs falls short by some thorn or scale. The counterfeit wasp is unmasked unless its verisimilitude is fairly exact. The chrysalis that does not exactly resemble the seed-pod of *Cardamine pratensis* pays the penalty of failure. We need not claim that the bird reasons about these things. As has been shown, we do not reason about our knowledge of them. The difference between the flight of a bee and a fly can be stated, but it is not stated every time we decide, "This is a fly and that is a bee." The decision is instinctive—

in us and in the bird or other observer. There is a large black fly with a red tail that resembles quite closely the red-tailed humble-bee. But beneath its livery it is fly through and through. Any man that needs, any bird that needs, can catch it without the least fear of its sting, and without having first to recite the difference between the diptera and the hymenoptera.

Motion is a great revealer. If a brown leaf stirs in the hedge, we know it for a mouse. If a bit of red in a brown tangle of brown grass and dead leaves blinks, we know it for the eye of a partridge sitting on her eggs there. The flicker of a fin reveals the brownest of trout on the brownest of stones. If we cannot get motion in the object, motion in ourselves will give us the secret. The grey stone in a field of grey stones that looks like a rabbit from the N.E. may be a stone, but if it also looks like a rabbit from the N.N.E. and from the E. by N.E., it almost certainly is a rabbit. The bird's-eye view is not taken from the perch, but from the wing. Everything below then moves. Patches of colour come away from their ground and reveal themselves as round objects, side views change to full views and head views to tail views. A stone with one ear may be a coincidence, but a stone with two ears and a tail must be eatable, and we stoop at it with confidence. No one would suggest that a hawk reasons the matter out like this, yet it is the material of this chain of reason that makes him decide that the thing is an animal.

The eye is so perfect a servant that it is sheer supererogation to bring in an extra faculty, or to

speak of "instinct" as though it were a thing apart from the ordinary senses. We are astonished at the sense of direction in the homing pigeon or the bee. Every one who has watched the sand-wasp marvels at the way in which it finds its way home. It opens a hole in a waste of sand that seems to present no more differences of surface than a waste of air. It closes the hole, then goes off half a mile or more to hunt for caterpillars, with one of which it returns to the spot, where it uncovers the hole and puts the booty within. It may be that a man with a compass and a very carefully marked map, in which every blade of grass and one or two special species of other plants were used as guides, could find his way from the hunting-ground to the hidden hole. But a wasp, not having map or compass, and not knowing the names of plants and how to measure distances, is usually credited by thinking beings with some intuitive sense of which we know nothing. Bates, who noticed the sand-wasps of the Amazons, says: "To my eye there was absolutely no landmark on the even surface of sand which could serve as guide, and the borders of the forest (the insect's hunting-ground) were not nearer than half a mile." Yet he believes with us that the insect did, by its rapid flight to and fro before leaving, scratch upon its retina some map of the place that enabled it to find it again after an exciting chase among the leaves of the forest. He goes on to tell us of an Indian boy whom they took on a hunting excursion. When the white men had completely lost their sense of direction in the maze of the forest, the boy, "who had been playing with his bow and arrow all the way, apparently taking

no note of the route, pointed out, in a moment, the right direction of our canoe."

Sometimes the eye seems to have a memory of its own. As we walk along, it suddenly dawns on us that there was something seen a few paces back. Sometimes we hope that by concentration of a bygone image we can add features not noted at the time. It is a doubtful effort. The addition is likely to be purely imaginary, and the final image a hopeless mixture of fact and fancy. Herein imagination spoils sight. There is nothing for it but to go back and have another look, a look in which the observer shall be attentive to all that the eye delivers, attentive also to Captain Cuttle's celebrated maxim, "When found, make a note of."

AN OCTOBER PIKE

UNDER the willows, stripped of their leaves, except for a few fluttering pennons, the river runs full and deep and mellow. The sedges have died into every kind of bronze and golden glory, and below water a good part of the vegetation has yielded to the flood and got itself tucked out of sight or carried away. Right across the river a wall of gloomy bullrushes stands four feet deep in the water and never were neighboured by lesser weeds. Their shade swallows the yellow tone of the water, and gives us from where we stand a pool of deep, unfathomable steel. It is splashed into silver ripples as our sprat, thrown to catch a pike, falls gently in at the end of a taut line some thirty yards in length. The first cast of the season is often a perfect one, as the first visit to the golf links after a long rest produces a stroke that fills us with wonder. As we work the lure towards us on a long slant across the stream, we see it from the mind's eye flashing and hobbling like a wounded fish. We see also a great pike pivot round to watch its course, grinning at it with all his teeth and gathering his springs for a rush at the escaping prey. However, the flashing sprat comes home to us without that rush having been made.

Along the hollow bank guarded by alder trees, right across the broad reach rippled by a bit of wind, in and out the deep, dark trench between osier-beds, round the perch-haunted "Swan's Neck" bend, swims the apparently adventurous sprat. The perch are game enough to worry the tail of the bait, which is not to-day guarded by a triangle, but nowhere except between the osiers is there a pike that happens to be in the mood for fight or feed. And when the solitary rise comes, it results only in a mere foot-long jack that we gladly release to grow big and fight a better battle another day. But this spinning with a two-handed greenheart rod is excellent practice for a far colder day than this. Some claim for rowing, others for walking, others for cycling, exercise that benefits the maximum number of our four hundred named muscles. Spinning, of course, includes walking, and it gives extra work besides for some muscles, including the important ones that clothe the lumbar region, as next day's stiffness abundantly shows. When we have gone a mile or two, we are amply inclined to rest and passively receive the benefits of a beautiful day.

Our stream occupies a mere trench in a valley that must once have been a river-bed more than a mile wide. Some of the greenest meadows in England stretch over the gentle slope that ends in hills barely a hundred feet higher than the centre of the valley. Then come snow-clad mountains, as they seem, really clouds moulded and lighted in an exquisite manner that extracts admiration, though they are seen everywhere and every day just now. The zenith is clear, fleckless blue, yet there is no

reason to suppose that the air overhead is clearer of vapour than that between us and the horizon. In fact, the clouds we see away there are, if anywhere, over the heads of some other people, who, nevertheless, like us, see blue sky. Those beautiful, curd-like, everchanging masses are only visions. So is the solitary beech blazing with splendour in the midst of a rising field. Field and beech are both visions. We can catch and analyse the blades of grass and the orange-scarlet leaves, as we can catch spots of the water that go to make up the clouds, but field and tree and cloud or mountain, as we see them, must disappear as we walk up to them. Rod and line and we ourselves are a little more real, or we think we are.

A big flight of plover passes from the invisibility of the blue to show every flying dot against the cloud-peaks, to be lost again as they come between us and the sepia masses nearer the horizon, then to show like a snow-storm as they all turn their white breasts before sinking below the line of the hills. A mallard and two ducks rise with clangour from the reeds at our feet and fly off in a long sweep that may or may not become a complete circle. Moorhens are clucking uneasily in the dark shadows beneath the osiers. A weasel, slipping eagerly through an outlying fringe of withered meadow-sweet, reveals sufficient cause for their anxiety. It is here that we saw in the summer a tiny moorhen disappear in a flurry of ripples as a pike, doubtless, came by a meal not found in his strictly regular bill of fare. The memory sets our sprat spinning with new hope, but we comb the suspected lair of the monster without tangible result.

Below the mill and lock the river comes down in two streams, one scarcely running, for the mill is not working to-day, the other hastening in little waves that leap over one another in their haste to leave the wide pool behind the island. Oaks and a wild pear tree all in scarlet stand there, great blotches of indigo shadow caught in the yet well-foliaged branches of the former. Across them an insect flying in the sun traces a lazy golden line, for it is flying with the langour of almost its last day. We trace it to a hole almost at our feet, whence peers out the sleepy face of another wasp pretending to keep guard, as was done in summer days. We can poke a stick into the doorway, stamp overhead, and tickle the door-keeper with impunity. The great round cave down there is empty of wasp valuables, its paper cubicles sinking down into one shapeless, bulkless ruin. Overhead, the last brood of the buff-tip caterpillars are endeavouring to find food enough to enable them to get into chrysalis before the winter begins. Ten of them are eating at once almost the last leaf on the tree, and that little more than juiceless fibre. It has handed in its little store of starch to the community, and is being slowly but surely cut adrift by the bud that will take its place next year. And the buff-tips will be cast away in their youth, instances of Nature's carelessness of the individual so long as the type is preserved.

From above the island the broad pool shows white and vast. Here the green cloth of the meadow curves over to meet it, hiding caves in which the water-voles and an occasional otter can drowse in dry security, their favourite element within reach at

a spring. There the warm-tinted red willow shoots fling their reflection in the mirror, and show that it is faintly lumped and streaked as it hurries through the narrowing channel at the lower end of the pool. The oaks from this sunny side are points of rosy light, partly by reason of their own tints, partly because the sun is westerling. In the amber mass of their reflection a bright harsh note is struck by our scarlet float travelling to and fro in little jerks as the captive gudgeon directs. For we have had to acknowledge our failure to-day in the art of spinning, and are bidding for our pike in a less sportsman-like way.

The pool is stirred on our side now and then by a little V-shaped wave running rapidly towards the shore, then turning and running obliquely out again. Evidently the perch are on the feed, and it behoves certain small fry to be very much on the alert. Then, far out, towards the apron of falling water, two bright silver fish leap hurriedly to right and left, as some pike makes his rush at them from below. He does not deign to chase his prey as the perch do, but bides his time to make his rush again at them or some other quarry. Of course, we imagine him steering straight for the place where our lure awaits him. But we have so often imagined such a thing in vain that it is a matter for startled wonder when we see the scarlet float make a dive as though to an unfathomable depth. It is astonishing what depth a float seems to find under such circumstances, even in no more than a yard of water. The tautening of the tackle makes it dimly visible for an instant before the pike dashes off with a snap-hook fast in his jaw.

Twenty minutes' fight makes it clear that his lordship of the pool is at end, though when he leaps up and tries to fall backward on the line, he strikes us as a monster of at least ten pounds. We will not say what the scales make of him. His weight is destined to vanish under that test as his silver and old ivory marked with splashes and stripes of deep olive-green and the golden bronze of his gills vanish when life goes out of him. So, much as he is admired when, an hour after dark, he is shown to those who had ordered his capture, none but ourselves can know the full glory of our October pike.

A YEAR OF SNAKES

IN the dusty road there is a seven-inch streak like a piece of brown whipcord. But it coils on itself and rebounds, like a spring made of spirally twisted wire. We pick it up with difficulty, for it is a tiny snake, its ruling passion strong, though it is scarcely a day out of the egg. If it had been a young viper it would even have bitten us as poisonously as the bee stings. But this little thing is the young of the grass-snake. It has the same golden ring at the back of the head, set off with a stroke of black, and the plates on its head can be counted for anatomical verification as easily as in an adult specimen. We are loth to allow any beauty in the snake. The eye, for example, must somehow express cruelty and cunning. It should be small or fiercely red, or frowning. There are, however, in spite of popular prejudice, many beautiful snakes' eyes at the Zoo, and our harmless grass-snake has an eye that when attention is drawn to it is well worth admiration. But the eyes of this baby snake compel admiration. They are much larger in proportion to the rest of its body than in the adult. The body, too, is slimmer, and even more graceful in its folds, and there are few things more beautiful than this seven-

inch reptile moving like Juno across the road, its head held high, with large lustrous eyes in front, and gold at the nape.

The ladies at the farm will not see beauty in any snake, great or small. Yet they have had more opportunities of admiring them this summer than for many years. It is astonishing that in a year of such gloom snakes should seem so abundant. The fact is that the sun has been so remiss that one of the equivalents of sunshine has had to be sought in the yards by warmth-lovers that in other years would have been inconspicuously distributed far over the fields. Always a snake comes in July to lay her eggs in the manure-heap, but she is very furtive about it, and usually goes away in the course of a few days without having been seen. There are in other summers other heaps of mouldering vegetation where wilder snakes can place their eggs with some prospect of their hatching into young snakes. This year, however, every snake in the parish seems to have tried the yard. Some fourteen or fifteen have been killed by boys in the near neighbourhood, and parts of the manure-heap seem to be mines of eggs. On the top of the heap grow pumpkins and vegetable marrows, and when the farmer's wife is courageous enough to go there for a vegetable, she usually sees a snake glide away from the mild sun-bath it had been taking. They did not come to lay and then decamp, but they stayed to take for themselves the same treatment that is good for the eggs. On a sunny day they can get as good a roasting here as anywhere else, and on a dull day they can keep much warmer than in the fields. Frogs are plentiful enough near

by, and there is no particular reason for going farther afield.

All the snakes seen have, of course, been great ones, for in this respect the unkilld snake resembles the nearly caught fish. Still, there has not been the huge one that the keeper saw on the rabbit-bank last year. When you see a snake in the yard, there is always the chance that it may come to book and be measured in inches. One of the largest is still somewhere in the pumpkin-bed, for it left the other day its own accurate measurement in the shape of a cast skin, perfect from snout to tail-tip. Its length unstretched is a trifle over three feet six. What must its age be? Our seven-inch eggling (which, once out, could never be got into the egg again), will be at least twice as long and three times as heavy before it goes into winter quarters. Even then it will be smaller than almost any snake that you meet with in spring, when you can with care see all the snakes there are. It should pass its second foot by midsummer, and if the rate of growth is nearly maintained should be in its second summer almost as big as the monster of our pumpkin-patch. Snakes undoubtedly, like fish, grow with a rapidity proportioned to the plenty of their food, and with abundance soon reach their maximum size. On the other hand, there is no more accomplished starver than the snake. It can go for months without food, though, of course, it must meanwhile forgo the pleasure of growing. We have no means of knowing what age a grass-snake will reach. We have not the habit in our country of allowing a snake to haunt one spot for many years or even days.

We look for it again in the same place, treading with caution, and then it is an easy matter to score another notch in the feud of Eden.

The frequency of adders this season is not a climatic symptom. A copse on the hill was grubbed up in late winter, and no fewer than forty-seven vipers were killed by the woodmen. They were easily accounted for, because they were caught in their dormitory. The viper comes abroad in spring very early, but in March there is not a third the life in his movements that he can develop in June. The number of corpses yielded by that little wood was a revelation to the villagers, who comparatively seldom see a viper alive. There was unbroken joy at their destruction, for every one dislikes the viper. He is not unapt to lie in a rabbit's run-way out of a bush, and when a dog pushes through has before now bitten it so badly as to cause its death. A few years ago a dog came out of a bush with a viper hanging from it. The keeper declared thereafter that the reptile jumped on its back, for nearly every one here believes that a viper can jump. There was no harm done that time, except to the viper, whose fangs were so caught in the dog's hair that it could be knocked off and killed. The lives of horses and cattle have several times been endangered, and even lost, by an angry viper striking at their nose or throat as they graze by him. In July their venom is at its worst, and the reptiles, especially the gravid females, lie insolently about where any one might tread on them. We have frequently been within one step of them before seeing the spotted, swollen thong of death on the path.

In their basking-places in spring we found vipers enough, in spite of the massacre in the copse. By the end of May these sun-parties break up, and each individual goes foraging near and far for mice and other game, many of them having no recognised den, but sleeping where daylight and a gorged appetite find them. Married couples often live a more regular home life, male and female being findable on a hot day in one place within reach of their respective dens. This year there has been no treading on vipers possible for children with any capacity for noise. There has not been enough sunshine to make them somnolent, and at the sound of human approach they make off. On the other hand, the quiet man has seen more vipers than usual. Whenever there has been the least sun they have been out, instead of enjoying the shaded heat under a loose partial cover such as a blackberry spray. When we picked our first dewberry on a south-sloping bank, we found a huge female coiled within a yard of the path, but almost hidden from it by a screen of long grass. The sun was shining, but with not much vigour, except on such a south-sloping bank, and the grass at that spot was so well beaten down that it was evident that it had frequently been used for the catching of inconsiderable rays in the best spot available. Another large female uses a bank of similar situation, but of loose stones among which wild strawberries grow. This is a more frequented spot, and, as a consequence, the snake is less certain to be found. It is usually seen in motion, having become aware of our presence before our eyes have found it.

The pumpkin-bed must be alive with young snakes, unless the wet summer has made an unusual number of the eggs bad. They are probably eating worms just now, and will spend their first short season on that for their main diet. They will be unearthed, and many of them slain, when the manure is carted out to the field. At any rate, that operation will make an end of their easy life in the land of plenty. They will scatter each one about its own affairs, but before winter there will be a reunion, and numbers will go into dormitory together. That will be somewhere up on the dry banks, and next spring on a fine day we shall find them laced together, enjoying the warm April sun. May it be warm enough to make their scales like hot flat-irons and their young bones to snap like gorse-pods!

TOWN AND COUNTRY MICE

WE have to deplore the dwindling of many of our animals, but the rodent tribe still faithfully fills all the small corners in the economy of nature for which it was designed. Theirs is the blessing of the meek. The fierce marten and polecat are on the verge of extinction ; the nocturnal and peaceful, though inconvenient, badger tries with indifferent success to hold his own ; the swift fox is only permitted to exist on condition that he makes sport for the still swifter foxhound. But the rabbit yields up her life without protest, as though secure in the knowledge that there are five little rabbits to come after her, and rats, mice, and voles furnish tons of carcasses annually for cats, owls, hawks, and vipers, and are still as common as ever. Either one of them is ready to eat us up if a single hostile wheel should fall out of order, and, in spite of every persecution, each of them has its scouts within our lines.

There is the proverbially silent house-mouse, which while we sit before the fire comes out and flits about the white hearth like a movable blot, seeming to amuse itself by appearing in all manner of unexpected places. We would gladly spare it if it were guaranteed

to be the only one of its kind here. But we know that our kindness would be repaid with a family of half a dozen and by four more families of half a dozen each before we were three months older. So the cat and the traps are kept very busy, and still the unwelcome breed flourishes in the wall-spaces and floor-spaces of the house.

The house-mouse is the town-mouse, whether he live in a country mansion or in the midst of slums. Our little flitterling of the hearth is a combination of fine gentleman and street arab. He takes a pride in his personal appearance, and his vanity evidently extends to delight in the observation of a human being he has adopted as his patron. But it must be observation at a distance. His eyes, set a little wide apart on a rather hatchety face and very prominent, see askance almost as well as in front. His ears are wide and thin to catch every sound and locate it in the world of strange echoes that a house must represent. His nose is alert for every message in that direction, and the fine vibrissæ on his muzzle stand for a sixth sense of which we have no conception. He is the figure of watchfulness against danger, and also the figure of curiosity and daring up to the very gate of danger.

On the other hand, take the vole, a rodent, but not technically a mouse, though sufficiently well named by us country people "short-tailed field-mouse." He has a broad, flat, farmer's face, with the eyes set close together, and his ears are almost lost in a bushy growth that resembles the bucolic beard. Not living in a world of continuous noise, he can keep out of the way very well by taking note of the tremors of the earth

when men and other enemies walk upon it, and, to be on the safe side, he usually moves through tunnels in the long grass. When the snow was on the ground we saw here and there a short track where his run had broken out into the open, and then, following up the tunnel, were astonished at his activity under that wintry scene. In nose he does not yield to the town-mouse, and wherever in the fields or outhouses there is food that appeals to him, there we find him. Potatoes, peas (just planted in their rows), crocus bulbs, acorns, are good enough for him, and he has not followed the epicure house-mouse into the beehives after the honey in the honey-comb. The vole rarely comes into the house, whereas the hearth-mouse is capable of making long excursions into the field. We have just found three of them far out in the garden, snugly camped out in the blankets of a beehive that had too large an entrance.

The house-mouse is a thing all nerves and sensibility. Civilisation has made kittle-cattle of it. Creatures out of doors are so stoical under pain that the casuist easily persuades himself that they feel no pain, and cannot be the subject of cruelty. But any one must be convinced of the contrary when he has caught a house-mouse in a live trap. It is trembling with fear, and actually drenched with perspiration from the obvious mental agony—deliberate anthropomorphism this—into which its mishap has thrown it. The wood-mouse shares this in some degree when we catch it in the box-trap designed for weasels and stoats, but the vole is as stoical as Fenimore Cooper's Red Indians under torture. So, by the way, is the rabbit, which, with a ferret gnawing at its back, often utters no

sound, and sits apparently chewing the cud as imperturbably as an ostler with a straw between his lips.

We found the other day, in a corner of the tool-shed, a nest of the "wee timorous beastie," for undoubtedly the "mouse" of which Burns wrote was the field-vole. There were five or six helpless babies in the nest, and while we watched, the mother vole came for them one by one, and carried off the whole family to a safer retreat. While we stayed quiet there was no hesitation in her coming and going. Her straight, narrow-set eyes pointed straight to the family to be fetched, and she came at them in a straightforward, one-ideaed way. A slight movement on our part gave a contrary impulsive stimulus. She checked in her path, but with her eyes still fixed on the major attraction. Then she came on again, and, the power increasing with the nearness of the object, she rushed the last few inches, seized one of the naked youngsters, and bolted as best she could for the retreat. We do not believe that the hearth-mouse would have come for her young at all under like circumstances. She would accept the first adverse verdict as final, and, mourn as she might, would make no attempt at appeal. Civilisation has thus far killed the primal maternal impulse without having put in its place, as it has done for us, a social standard of what it is right for even the most timid and the most philosophic to suffer in defence of a fellow-creature.

The vole, like the rabbit, is sociable, but not social. The devotion of the individual to the community does not rise to the height that it reaches in the viscacha, the members of one colony of which will, according to

Mr. Hudson, travel far in order to dig out their neighbours who have been buried in their township by the ranchers of the pampas. There is a favourite corner of the field below the garden where we can always find a colony of voles. They drill their neat holes very near to one another, but rarely, if ever, share a common entrance. It is difficult to see how they gain by this colonising habit, while the kestrel by day and the owl by night find their work comparatively easy, thanks to the hunting-ground being so circumscribed. Probably there is a sentinel, delegated by the community, or self-appointed, usually ready to give warning from which all the others may profit. More likely, the hourly sacrifice of one of the voles is cheap because it scares hundreds instead of few or none, as it would do if each vole family lived apart. Twenty-four casualties a day may seem a heavy toll, and is, no doubt, in normal times seldom reached, but when a large colony is bringing forth its thousands of young every week, it can stand a far greater drain and still go on increasing to plague dimensions. In the great Scottish vole years of 1901 and 1902 the local owls were reinforced by hundreds of the short-eared species from the Continent, which nested there and reared several broods of young in a single season, some of them with twice the usual number of chicks. It was a superb battle of mice and birds, though it is not certain that without the intervention of man the birds would have won. Most probably so, however, for, while more mice led always to more owls, they also meant less grass, and thus fewer and weaker mice to withstand more and hungrier enemies. We are content to have the balance perennially even, or oscil-

lating without marked sensation. A single mouse in its place is an addition to the interest of the field, or even the house, and we can sleep without worrying at the potential volcano of vitality that they represent.

WHY THE LEAVES TURN BROWN

THE house-wall that belongs to the Virginia creeper is flaming scarlet; yellow fire is creeping down the mighty elms; sycamore and lime hold up huge golden plates to the still air; dogwood is purple-black; the blackberry brambles show all these colours and many more; the beech will soon eclipse them all with its red-hot, radiant copper; and then down will come all these banners to the earth that gave them. The unending beauty of autumn reconciles us to the sadness of the winter change. It strikes us as more of a miracle than the green progress of spring, because we understand a little the reason of greenness, while we shall never understand why it serves the trees to be quite so beautiful in their annual moult. Perhaps there is no answer, but we shall for ever ask the question, as well as answer it with absurd inadequacy.

Death is usually accounted a privative phenomenon. It is life that changes the green caterpillar, through the brown chrysalis into the richly painted butterfly. But the butterfly is not more brilliant or varied than the green leaves that have been painted by death. We are asked by science to believe that autumn leaves are red because the green chlorophyl grains have been withdrawn from them—that the red was there all through the summer side by side with the

green, or even as one of its constituents. It does not satisfy. Pale green from dark green does not leave yellow—it leaves blue. Blue-green from green may leave yellow, but not the rich positive yellow of the maple. No painter can add beech-red to beech-green without making mud, or paint the flaming Ampelopsis leaves so as to make them a transparent green. Nevertheless, Nature may have done it, and it is the element of miracle in them that makes the autumn tints so delightful. The miracle is really in the summer green, but only the *dénouement* of autumn awakens us to the fact.

The popular belief that the leaves are nipped off by the cold night of autumn is as remote from the facts as the poet's cry that the young buds of next year push off the leaves that have had their day. In other climes the leaves come off at the approach of hot weather, and grow again when the cool rains come. They fly from the tree like intelligent units when they are about to become a burden instead of a help. The snows of winter would break the tree down if there were broad leaves to settle on; the scorch of the dry season would make it perspire to death. So in each case the leaves desert while the bad time is scarcely more than imminent. The order of course comes from the roots. The flow of sap, which has been abundant and regular while summer lasted, begins to fail when cold rains have chilled the soil, or the tropical sun has dried up the supply. Leaf transpiration comes to exceed the intake, and at last the tide flows the other way. The outposts are not driven in, but recalled. The starches and the sugars that the chlorophyl has been making pass from

the leaf to the twig, and often to the branch, the stem, and the tuber warehouse underground. As they pass from the leaf-blade to the permanent wood, some one closes the gate. The outwork is to be abandoned, and bark must grow where there were channels for the flow of sap. The leaf, or the skeleton that remains, is no longer of the tree, though it remains on the tree till the cleansing wind shakes it down.

A curious phase of leaf-abandonment is shown on our house-wall, where the Virginia creeper is flaming so redly. First of all, the substances that the green cells have worked for are withdrawn from each leaflet to the leaf-stalk. The cork layers of separation are formed, and one by one the leaflets fall, till the wall bristles with leaf-stalks, down which the sap is slowly passing to its true winter quarters. For soon the lower bridge is blocked, and a second moult rids the creeper of all of its summer hamper. It is the same with the sumach, the ash, the chestnut, and the "Sacred Tree of Heaven," which has become such a favourite in our towns. It seems as though these trees hoped every year to be allowed to retain at least the long middle stalks of their leaves. It is not to be, however, for, one and all, they are at length compelled to cut down to the first bud. One wise and capable plant alone there is in the garden that retains a bit of the stalk. That is the syringa, which keeps just a scale-like portion as a house for its bud till next spring.

If what we have said were the whole truth, we could have autumn tints at will by starving the roots of our summer trees. The elm branch that we broke in climbing for the magpie's nest shows that this is

not so. The leaves withered in a day, but they never turned yellow, and are even now hanging on the wounded branch. They will survive even the orderly retreat of their yellow fellows now mustering for the last review. The cork-forming habit, then, so far as it relates to the base of the leaf, is purely autumnal. It is something so much higher than the automatic back-flow that follows decreased pressure, that it is almost worthy the name of intelligence. It is, at least, a seasonal habit that stands very much for the preservation of the tree.

It is a rule that the trees that first went into leaf in spring retain their autumnal glory longest. At the end of May the freshest green was that of the ash, following much other foliage that had already passed into the sober hue of middle age. And now the ash is stripping off its pennons so rapidly that they have no time to get rid of their chlorophyl first. The elder, which gave its treasured wisps of green in February, still shelters the thrushes in a complete dome of leaves as they sit and gobble the rich black berries. "The brushwood sheaf round the elm-tree bole," which burgeoned more than a week before the upper branches, has not yet caught the yellow fire which has consumed the topmost sprays, and is burning the great middle portion. On the other hand, long after the lower boughs of the poplar have yellowed and become bare, the top will bear plumes almost as green as the mistletoe that the storm-cock has planted among them. Differences of character, not merely between species, but between individuals, constantly present themselves as we pass through the field of battle. A single sycamore within twenty yards of

many others is a pillar of fire, while its neighbours are unflecked. Here, side by side with oaks that are withering in their dour fashion, is one dressed in the tender red-green of spring. The birches on the top of the gravel-bank have lost their plumes, while those only twenty yards below are covered with parti-coloured leaves. The outer part of each has been abandoned, while the base is full of the green army retiring towards the twig.

The chlorophyl grains swim in the protoplasm of the cell, as the red corpuscles in the hæmoglobin of our blood. When the light is weak they muster clamorously at the surface, for then each must work its hardest to get the utmost chemical advantage of a short supply. But when the sun shines strongly, the leaf grows less green. A few chemists can do all the work, or the flat granules only need turn an edge instead of a broadside to the sun. The pupil of each cell contracts as does the eye of the cat under similar circumstances. The brightest greens are those found in deep, rocky pockets, where hartstongues and liverworts eke out a laboured existence, or in darker places still, where the Luminous Moss earns its name, merely by the activity of its chlorophyl particles. There is much to be learnt about these tiny green bodies, but we do know that some salt of iron seems essential to their formation. Give a plant soil that has no iron in it, and it produces white leaves, which are not of the least service for prolonging life. Feed it now with an iron salt, and the leaves become green and serviceable. Surely, then, the secret is out, and we know why the leaves turn brown. Added to all that wonderful list of benefits that Ruskin reminded the people of Tun-

bridge Wells they owed to iron must be the green of summer and the glory of autumn. It is to the rusting of infinitesimal particles of iron in the abandoned leaf-structures that we owe the elm flames, the scarlet of the whortleberry, and the glowing fires of the beech.

and possibly they grow to form another like green in summer and the glory of autumn. It is as the rising of individual particles of iron in the rippling of leaf-structures that move the skin leaves; the action of the sun, the wind, and the growing force of the leaf.

And as the leaf grows, it is not only the leaf that is growing, but the whole plant, and the whole world.

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WINTER

WINTER—CONTENTS

IN THE RAIN.
BROADLAND IN WINTER.
OUT OF BOUNDS.
"TOADSTOOLS."
THE BEE IN WINTER.
THE ROBIN.
THE LIFE OF A FOX.
THE WINTER GARDEN.
THE SLEEPERS.
FRESHENED BY FROST.
THE COW AND HER HORNS.
THE ROBBERIES OF THE SEA.
NEXT YEAR'S APPLES.
BROKEN SLUMBER.
"THE CLANGING ROOKERY."
STARLINGS.
THE FERMENT.
PRECOCIOUS KEW.

Farewell, ye withered flowers,
That on the cold ground lie ;
 How gay ye smiled
 'Mid the brown wild
'Neath summer's painted sky.

Passed hath your bloom away,
Your stalks are sere and bent ;
 On the howling blast
 The rain sweeps past
From the dim firmament.

I think me of your pride
When zephyrs come with spring ;
 Then sigh to know
 What wreck and woe
A few brief months may bring.

MOIR

IN THE RAIN

SILENT, invisible, unromantic, but most drenching drizzle. It comes from the unmoving pall of a white mist that may be piled to the top of our atmosphere or may be only a few yards thick between us and the sun—a question of much moment to those who believe that such a day of all-pervading damp is one of the days that cannot be spent in the open. It only presents us with the trifling problem, whether or no to take a cape or mackintosh to cover the shoulders. And whether the optimistic belief that the cloth of descending moisture is getting threadbare is sound or not, the mackintosh is a good thought in view of the fact that we expect to walk under dripping trees. Every branch holds a shower-bath booby-trap waiting for him who unwittingly touches the spring. The birch trees hold their diamonds best, every twig of that drooping, fountain-like growth having its pendulous globule. No water comes down those silvery or deeply scored trunks. Every drop that falls on an outer branch flows not inward but outward, not from tributary to river, but, so it seems, from river to rivulet, thence to the tiny invisible twig, to pause and twinkle, as though hesitating to take the long drop to the ground.

Down the vivid green trunks of the beech, on the other hand, dash veritable torrents, that have accumulated from the labyrinth of boughs, the topmost of which are quite lost in the mist. Their trunks are marked by black streaks in the green, black as night till the carefully focused eye sees in them the white threads of hurrying waves. Some of the would-be tributaries lose their way in the lower reaches, just missing junction with the main stem by reason of some awkward kink that sends them to the lower side of the bough. So they drip in a white cascade from the elbows of the tree, drilling miniature pocket-holes through the loam to the gravel, and churning their contents to a white froth. Below these dripping elbows are the only dry stretches, running into deep and cosy arm-pits, where the delicately over-winged winter moth, or his fat, wingless spouse, may hang in safety and wait for better flying weather. The deeply corrugated oaks offer more frequent, though more risky, havens, as testify the torn wings of the male fluttering from the drenched web of the spider.

Kicking very deeply in the beech leaves, we can see how the rain has added many tones to their red. The dry leaves that come up are pallid, half-painted things by comparison. The bracken which yesterday matched without fault the big red stag, to-day reveals him like a lemon or orange, for if somehow he has not managed to keep dry, his hair does not soak up water like the dead vegetation. The bad weather has soured his temper. Instead of throwing out his maned chest, tossing his head, and pawing the ground to intimate that he will not have his hinds disturbed, he turns his back on the human intruder, and

sulkily bullies his wives from the ditch under the fence where they have made some kind of shelter from the falling rain. He does not take their place, but just compels them to stand out there and be thoroughly miserable with their lord and master. As we turn from this picture of four-footed human nature, a wood-mouse slips from the open, back into the shelter of a hawthorn. He, too, has all the colour of dryness as he passes across the sodden leaves and negotiates the jewelled bush without bringing down a particle of rain. A blackbird passes by with that whistling flirt that thick weather produces from his usually silent wings, and a few birds, known as jack-daws by their voices, though lost to sight in the mist, make a noise with their wings not unlike sawing. Farther off, the carrion-crow hoarsely laments the days when there were plenty of eggs to be sought and eaten, and from almost under our feet flies a speck of avine anatomy that seems too busy to notice that the day is a wet one. It is a gold-crested wren, and in the next bush we have it at arm's length, as it hangs and reaches this way and that, unmindful of the danger of bringing down a torrent of drops that would surely overwhelm it.

Many of the rabbit-holes are wetted through, if not flooded out owing to a defective arrangement of the main entrance or the bolt-hole. Our dog puts their owners out from the bushes, and even finds them in spare, hare-like forms on the open bank, where some of them seem to prefer the regular drizzle to the annoying, unexpected splashing from the twigs. With all its drenching, the bank is dryer underfoot than the dead leaves at the bottom of the hedge-row.

We find that some of the bunnies that were sitting in the open rain had chosen stones to sit on, and these are dry and warm as toast immediately after their occupants have scuttled reluctantly to cover.

At three in the afternoon the rain ceases, and some sort of sun-glow struggles for a few moments through the mist. It is too late in the day for sunshine, however. We get a transient taste of what a full light could do with the damp-heightened colour of bracken and beech leaves, and then a whiter mist than we have had yet, the mist of evening, rolls apparently from its hiding-place in the bushes and takes imperceptible possession of the fields and open glades. It softens and glazes the tree-trunks into a sort of charcoal grey, then slips behind them and shuts out all the beyond with such a veil of pearl that they come by contrast blacker than ever. It hangs the drooping bracken fronds with a pearling that trembles on the verge of hoar-frost, which, by morning, it will surely be. It weaves in and out of the bare branches, till it decorates them with a ghostly imitation of their summer foliage, and it makes the red deer loom like gigantic moose, and the jackdaws like eagles.

A thousand wood-pigeons are going to roost in this wood. As we pass, company after company leaves its session with a roar like that of an express train. Not as Virgil has it, *subito commota columba . . . plausumque . . . ingentem*. Our doves can clatter like this when the air is clear, but the buffers of the fog reduce their sharpest clamour to a roar. We overtake them again and again, for they flee from us in the line of our advance, and do not care to go far, as though fearful of losing the favourite part of the

wood altogether, in the mist and gathering dusk. So we drive them by platoons till, with one great roll of thunder, the whole army at length rises and makes back on both flanks to the place from which they were originally disturbed. The starlings that roost in the hazel rods, we imagine, have not performed this evening their bedtime evolutions. As we pass through the midst of their dormitory, an occasional whistle proclaims the fact that they have not yet quite sunk to sleep. Yet it is well past four, and only owing to the superior refractive power of a damp evening can we see to the south a staining of our woolly nightcap that proclaims that there the sun has set in a splendour that only those that soar above the mist can see.

BROADLAND IN WINTER

THE Norfolk Broads are well known to most of us as they appear in summer, when a more or less cloudless sky paints their waters blue, when there is scarce wind to make a whisper in the long wall of sedges, when the halcyon, a living azurite, dashes after its prey, or hovers, as some say, to fascinate little fish with its flame-coloured breast. Not much before June do holiday-makers seek the Broads, to speed over their watery vastness in foreign yacht or red-sailed wherry, better adapted to local uses. They find the meadows knee-deep in grass and vivid flowers, trees full-foliaged, reeds blue-green from the high tide of their sap, water-lilies covering the water with tumbled leaves and opening rich cups of blossom. By the time the August tide of visitors is at its height, land-locked waters like Fritton are not only choked with larger herbage, but crowded almost to the consistency of pea-soup by countless tiny animal, vegetable, and border-line atoms swimming free in it. The angler grumbles because the rivers are one jam of natural food ; the yachtsman runs some risk of getting becalmed in the middle of Wroxham or Oulton.

When the swallows have departed and the hooded crows have come back, Broadland begins to put on a totally new aspect. The luxuriance of summer

is first checked, then killed and cut away by nipping wind and wave. Fecundity abdicates, and, by gigantic slaughter and competition, life microscopic, small and large, is by painful stages brought down towards a mid-winter level. Superfluous animalculæ are packed into small creatures; superfluous small things into big ones; and the remainder go prowling about in the keen, clean atmosphere, whether aerial or aqueous, ravening, but enjoying life as lotus-eaters cannot do.

Broadland awakes to new and tumultuous life when great flocks of lapwings and golden plover struggle over the North Sea, to rest, dead beat, on the flats nearest to the sea, when countless small birds from the Continent come in for the winter, aptly mixed with the Norway bunting called "snow-flake," when thousands of black-backed gulls, in immature and adult plumage, perch on the ronds, when, every day, the great "V's" and "W's" of ducks and geese waver across the sky, and late solitudes become populous with sheld-ducks, scaup, widgeon, pochard, golden-eye, and countless other refugees from the "north wind that blows." It is then that the natives of Breydon and Oulton take down their fowling-pieces, reship their carronades, and launch their flat-bottomed boats for a cruise strictly on their own account. There are no longer open-handed tourists to enable one to earn an artificial living. Existence is once more based on first principles, and Norfolk is once more a pristine land in which the hunter lives precisely by what he catches.

That native naturalist of the Broad, Mr. Arthur Patterson, always has more to tell us about their

winter aspect than of summer days. He has given us before a few pages of his somewhat wintry boyhood, glimpses of a naturalist's life that would amply repay the attention of a Smiles. If Broadland were not Broadland we might imagine that the struggles of his youth had endeared him to the harsher aspects of nature. But the plain fact is that winter is Breydon's season, and not to know her then is not to know her at her best. Certainly, in Mr. Patterson's latest book, "Wild Life on a Norfolk Estuary" (Methuen), his wintry pictures are the most entrancing. All the tales of his Breydoners are of wild-fowl, icily, and not seldom perilously, hunted, for Norfolk's rare visitants, so many of which Mr. Patterson has reported, very often come down to us on pitiless northern weather.

It is in winter that the wind-driven tide comes in from the North Sea, as though Neptune were annually reminded of the realm he has lost since the Romans administered an archipelago where now continuous land stretches from Norwich to the coast. Much has been snatched from him by the forces of nature, but all along Breydon the tides chafe against man-built walls, and are often for hours together high above the level of the fields within. Sometimes there is no perceptible ebb, one tide coming in on the top of another. In quite recent years more or less significant breaches have been made, and Mr. Patterson predicts, like many an old Breydoner in whom some dim wish may be suspected of being father to the thought, that some day Horsey will give way. The fact is, however, that in the still open parts of Breydon shallows and banks are growing annually more ex-

tensive, and the whole of Norfolk is no doubt being gradually raised yet farther beyond the reach of the sea.

Life becomes adventurous on Breydon when the thick sea fogs roll over all the flats, bringing sudden night at any hour of the day. In a few minutes the puntsman has lost his bearings. The tide may have drifted him beyond the drain he was making for or it may have taken him within it; he may be in the fairway or he may be on some mud flat that will hold him, as soon as the water falls a few inches, for a cold and miserable five or six hours. If he is wise, he anchors while he is yet fairly certain of his position. The notes of perplexed fowl come to him through the fog, and if a titlark flies overhead, its wings sound in the dense air almost as loud as the pinions of a duck. He is perhaps companioned within a yard or two by some bird that he would give his eyes to see at such close quarters. In otherwise clear weather heavy rain sometimes falls so thickly that the birds disappear at a space of a few yards, and the gentle cry of dunlins can be heard on all sides without one of them coming in sight. Picturesque as are the flying scuds, dashing the glum mirror of the Broads into white spray with their passing feet, we like better the open weather of the most bitter frost. Even the hardened Breydoner cannot stand the rain long, making for any shelter when once it has been made clear that it must be wet for a few hours on end. But when the tide runs up to the sound of the tinkling ice, when the dead reeds are held fast with a frozen sheet daily stretching farther over the deeps, when the boat's prow and the oars to the gunwale are

thickly enamelled with frozen splashes, and the beard is hung with icicles, the gunner goes with chest bare to the diaphragm, and rejoices that he is alive.

The hardest work on Breydon is when the water is thus full of "slub." But it is then that the inland broads are sheets of ice and their winter denizens have been driven down to the still open water. The change of the tide or a sudden breeze will pack the loose particles of ice round one's boat, the contact freezing them into a sheet to which the ice-axe must be taken or a long imprisonment faced. Or a field of more apparent drift-ice may move down on some solid objective, which may be a boat, or even a moored yacht, and in a few minutes pile it yards high. At last Breydon itself freezes. Water-fowl float in safety in lakes surrounded by ice, seldom, though sometimes, molested by resourceful puntsmen, who, at considerable risk, use their boat as a sledge and thus bridge the new defence. For the tides swell under the skin of ice, making it groan and crack into long fissures, and it is only a man both bold and knowing that takes a hand when Neptune and Boreas are fighting for the mastery. When the end comes and open water sweeps up and down Breydon once more, we learn that the depths also have been frozen, and in the "stock ice" that comes up from the bottom are sometimes thousands of dead crabs, and for at least one season the chief pest of the eel-fisher is almost non-existent. So fares the winter through; and when in early May the cheerful cry of the whimbrel is heard, we feel as we did last year and the year before—that spring, after all, is the best of all seasons in Broadland.

OUT OF BOUNDS

LIKE a very leisurely blue-coiled snake, the Thames runs, in summer time, in and out among the Buckinghamshire hills. Enough water flows out from the Berkshire and Oxfordshire meadows, and from the wooded slopes of the Cotswolds, to keep it always fairly full, though in summer the angler often waits a long time before a high thunder-storm will colour the water enough for his purpose. To-day, two fishermen have come up the river from London, and are bewildered because they cannot find the river. There is water almost all round the station. It laps the very metals of the railway line, rushes through culverts usually dry, and swirls across the road by which one ordinarily reaches the river. The Thames has become a mere current in the sea. Its banks are of water reasonably still, its towing-paths are ledges of gravel on which adventurous gudgeon may feed, its shallows are deeps, its depths chasms, rapids are pools, beaches rapids, bends backwaters, peninsulas islands. Our fishermen can either go out in a strong boat, and take soundings for the river, or they can fish for pike above the buttercup roots, and try whether the carp are singing: "Where the bee sucks there suck I."

Erratically winding as our summer river was, its orderly habits had none the less impressed upon it the appearance of a civilised being. Even though its banks were not straight, they were parallel. The steady rains of a month deepened and deepened its flow, added millions of tons to its daily burden, only quickening its march along the groove that centuries of well-doing had worn for it. But, at the bursting of its bounds, it flings all order to the winds, and indulges in all the fantasy of outline that characterises the prehistoric. In these uncharted wastes of water we expect to see the plesiosaurus craning its unsettled neck and flapping the paddles of early biological experiment. We are astonished at the equanimity of a horse grazing at the little bit of grass that is left him in a field that has gone under water all round him. The water, which is still rising, must be shining in his eyes from among the grass-blades, and wetting his lips as he nibbles them off, but he grazes on at his Sargasso sea as though it were the veriest dry land ever seen.

The sheep in a neighbouring field are better off, though the level stands scarcely higher. The grass waves as rankly dry as ever it did, and the hypocritical gravel on which it grows seems to cry that it knows nothing about any such thing as floods. It will run dry as quickly as it runs wet, and take the same part in the flooding of lower clays that other gravel up the river has done. If man is not demented by the cataclysm, why should the sheep be that are in his care? They bleat for their fodder, and it comes to them, not in a cart, but in a weird machine made by wrapping a wagon-box in a rick-cloth, so as to

make a water-tight boat of it. If matters grow worse yet, no doubt man will come for his sheep on wings, as, perhaps, he had better do before night and further bewildering invasion of the water. Yesterday a whole stockyard had to be cleared in haste, and the cattle moved to higher ground beyond the reach of all historic floods. The water is in the covered sheds, sucking out the dressing of next year's crops, cleaning out the stable in the lazy and extravagant way that has won for Hercules the contempt of all farmers. It is stifling the wheat in its seed-bed, rotting the beans on their young roots, devitalising the soil, and weaving a garment of despair that it will need a very beneficent spring to dispel.

There is no repentance in the sky of the havoc that is being wrought. There was a mighty gale that might have swept away the eternal clouds, but they still fill the dome with their brown fleece. It is dotted with birds in flocks passing high over the floods in search of some happier hunting-ground. Many of them are sea-gulls driven wailing from the sea-coast by furious seas, and cheated by the waters of their river-side fields. There is a foolish consternation among the rooks because the waters have lapped the roots of their elms. At this time of the year rooks have usually very little interest in their rookery. They live elsewhere, and pay the household sticks the briefest of midday visits. But to-day they assemble in the ancient summer village, and discuss the situation in loud and querulous tones, a very clamour of despair that voices the apprehension of the whole valley. It is always the people who are least hurt that make the most noise. Who shall

understand the silent tragedies that have taken place under these silent, inscrutable waters—the moles that have been drowned without the least chance of escape, the rabbits surrounded and baffled, mice in the hedge-rows that are now but lines of twigs in a muddy lake? The attack is not always frontal. The enemy gets silently behind, embracing a doomed field with long arms, then closing on its helpless inhabitants.

Differences of level were so slight before the water revealed them that we shall never get rid of the habit of speaking of the treachery of these inundations. A path that we should have said was level now dips into the flood as though the very earth had turned traitor. A lawn that, in the beguiling language of the estate agent, lately "sloped to the river," now slopes right under it. Its boundary is just retained in the shape of the tips of a privet-hedge struggling in the current. Just below the flower-beds a garden-seat stands a foot deep in the water. The picture is not so ironical as when the last great flood swallowed up a June garden, bringing the muddy face of revolution up to the roots of geraniums and carnations and decorating the brown scum with blown rose petals. One house stands with its front door a foot deep in the water. The poor rose trees stand in it like sheaves of rushes, and winter jasmine, covered with yellow blossom, clings to the house-wall, and looks down askance. There is box edging next the gravel path (seen with the eye of faith), which edging, the gardener, no doubt, flattered himself was as straight as a die. But the water, judging everything with cruellest impartiality, declares it to be tilted like a roof. And it denounces the fallacy of the rock

garden by blotting it out, while it leaves the herb garden high and dry.

Some of the pleasantest gardens up the Thames are those open to every wanderer, the river-side churchyards. You may lean on the low wall under weeping-willows and watch the clear water passing regretfully to the sea. But now it has come to the coping of the wall, and stands waist-deep on the inner side of it. Scarcely a yard more and it will enter the church, as it just did in the memorable flood of sixteen years ago. But a yard rise now means ten times as much water as it did when the river was in its bed. It is but a stone's throw to the towing-path on the other side. A tributary entered there under a high-backed bridge, and all that remains of the towing-path runs over that bridge, which, instead of spanning a stream, joins its two ends in the midst of the sea. The tributary is wiped out for half a mile. The running of its water is, undoubtedly, stopped by the incumbent lake. The fields have vanished in every direction, and far out two men in a punt are working at what looks like an islet of osiers, but is, really, the last high ark of refuge for a thousand acres of land. While they are getting on board their last cargo of sheep, the water licks up the wall a space that looks like another inch. Two or three hurdles come down the stream, turning from broadside to endwise, racing one another as though in the glee that a novel experience gives. They pass over the weir with scarcely a kick, for the six-foot fall has been converted into a mere rapid by the swelling of the backwater.

The rain has ceased, that is to say, we have had more consecutive hours of dry than at any time since

the first of November. But the river rises as inexorably after the rain as while it was falling, and every drop that falls in three thousand square miles comes net to our half-mile valley. In the mystery of dusk each burble of the river speaks like the snarl of a fresh conquest. The night mist magnifies the evil by taking away the bounds between land and water. It soaks the whole world in one watery dissolution. All the trees stand in a white sheet that may be land or flood. Cottage lights are reflected in a red gleam of ripples, or a red gleam of wet earth, or stagger through a red wool of suspended vapour. We know that all the sluices are open, that all the weirs still ripple, but it seems as though nothing would ever drain our river back into its channel.

" TOADSTOOLS "

THE warm, clinging nights that brought the mushroom into being are for the most part done with. Or they have retreated to the woods where they bring up all manner of poisonous and suspect beauty known by the comprehensive name of toadstools. Every day presents us with some new decoration of decayed stump, tall dead tree, or seemingly bare bank where leaves are rotting under the soil. You cannot walk far without being attracted by some *russula* underfoot in the open alley-ways of the wood, for the hues of the *russula* are almost as the flowers of the field, ranging from nearly the blue of chicory to the gloomy maroon of dusky crane's-bill.

On our heathery common where the birch trees grow, the most brilliant of all our fungi scatter themselves like ripe red tomatoes, each strewn with white spots that serve to enhance the brilliance of the scarlet. Nobody is likely to mistake the fly-agaric for one of the many edible species that are to be found among the mob of toadstools. Even the slugs that batten on the *russulas* that no human being may eat give these a wide berth. But if you split them you will find now and then the galleries

of some fly in the grub stage, surely a very special fly to forage in so poisonous a mess. The association between the fly-agaric and the birch tree is very marked. We scarcely ever see it ten yards from a growing birch, and have usually found some stump or trace of the tree whenever the fungus has apparently sprung up outside birchland. It is not, as most people imagine, a parasite or a battener on the decay of the tree, but a partner, very much as the nitrifying nodule is a partner to the great leguminous class that it almost exclusively serves. At any rate, we make bold to think so, and long ago shook out some of the spores under the birch on the lawn, and have added to the glory of the pale golden leaves the fiery glow of what the gardener calls "them nasty cankers."

"Mushroom" has become the last word of reproach for the rapidity with which it springs up, apparently out of nothing. It is because no one sees the long preparation by which the miracle is preceded. The flowering of a fungus is a complete triumph of organisation. For months the thin mycelium-threads spread through the country which is their source of supply, often a country full of chasms, fissures, faults, which must be bridged again and again by these airy message-lines. A pheasant's footstep is a catastrophe breaking many bridges, but they are silently and swiftly renewed and all the communications made once more intact. The invisible army of occupation goes on extending week by week, and still nothing else happens. Then, as though at a word of command, concentration becomes the order of the day. Supplies pour at breakneck speed along those

countless roads. They meet at the arranged point which yesterday no one could have foretold. Their infinities of little pile up into an infinitely great, a dome like that of St. Paul's, but reared on a single central column. On the under-side it is fretted with deep grooves with walls as slender as a barb from a bird's feather, and deep in the grooves are placed millions on millions of highly elaborated bodies, the germs of future fungi. It is the miracle of Aladdin's palace, performed by the million every brooding autumn night.

We have not the hardihood to dine on fungus except when we can get a basket of the one pink-gilled, easily skinned species which, under the name of mushroom, we lift from its fungus class into a position of special honour. Yet in fact there are tons of food just as good as the mushroom among these other fairy palaces. In the dank grass where the mushrooms grew are umbrella-like champignons which we could surely pick without an atom of doubt. Among the bracken gleam greenish yellow caps which, being turned over, reveal a pin-holed sponge instead of the usual gills. Drop it quickly. A thing so remote from *Agaricus campestris* as this must be not merely poisonous to the palate but even dangerous to the touch. Not so. This half-pound *boletus* would make for us, if only we had the courage to cook and eat it, a dish superior to mushroom. They eat it in countries where they deem the mushroom poisonous, and the Italians exiled to this land of fogs carry away the dainty by the handkerchief-full. But be it known that there are five or six *boleti* and only two of them

edible, the others being compounded of baleful fire and stomachic torment. A safer experiment in mycophagy is to climb an oak and fetch down thence a fungus that looks like a pound or two of beef steak, for it is indeed a beef-steak fungus that juts out there like a rolled ox-tongue—a link between vegetarianism and a carnivorous diet. Indeed, vegetable gravies most beefy in flavour are sometimes of fungoid origin. Again those pearl-grey half-moons jutting out in a big cluster from a decaying stump are oyster mushrooms—if only we could be perfectly certain of them—and one of the most delectable of all mushroom dishes.

A beech tree that has been dead some years, and still stretches its branches but not its twigs far up towards the still sky, is begemmed from top to bottom with shiny, slimy, white fungi, with here and there a blue-grey boss as a link between them and the dead grey bark. A hornbeam has been rent as though with an explosion where the mycelium insisted on coming through, and it has built there a pile of blossom that looks like a dish of nearly two dozen very large and very appetising penny buns. The golden-brown caps are glazed in the pastry-cook's best manner with sticky sugar through which you seem to see the gleam of saffron and other tasty contents. A water-dripping bank that seemed to be covered with huge dead leaves turns out to be covered with sad-brown fungi, the edges of the caps turned upward, twisted and curled like the wasted leaves of butter-bur or colt's-foot. But look into the hollow branch where once a little owl nested. While a red fungus unfolded its button there, a spider spun

her web across, and now the button has become a full-grown umbrella, and has scattered the whole grotto with brilliant spores the colour of fresh chloride of gold. The gossamer has become gold-spangled muslin; the sides of the cavern glow like fire; it is almost impossible not to talk nonsense about some fairy queen inhabiting there.

To what end all this magnificence? It is one of the unanswerable questions. It does not appeal to the æsthetic sense of any useful insect. When a fly is wanted to carry the spores about, the stink-horn knows well enough how to get scores of them—that is, by a stench of bad eggs and sulphur that fills the wood from one end to the other. But the spores of the stink-horn are borne on the outside of the cap, while the gorgeous *russulas* and others protect them under the dome. We must fall back on the theory of warning colours, though not with entire confidence. The fly-agaric no doubt effectually calls out, "Thou shalt not eat." There is no ambiguity about its red and no doubt about the reality of its ultimatum. On the other hand, the difference between a poisonous and an innocuous *boletus* is merely the difference between one "Liberty" tint and another. And many of the most gaudy of woodland fungi are not only nibbled by slugs, but torn up and devoured by squirrels and mice. The most brilliant of all fungus gems is the *peziza* that we call "moss-cup," which blossoms on dead black sticks in gloomiest and dankest ditches. It is almost as woody and uneatable as the stick on which it blooms, and even if it had the colour and the fragrance of honey, nothing would feel disposed to

eat it. The outside is brilliant mauve, and the inner concavity the intense carmine of unwinking fire. It is in the cup that the spores are pitted in clusters, but what adventurous insect goes in there when the frost is on the bog where *peziza scutellata* delights to blossom? And what animal even in the rigour of winter would wish to eat so unlikely a morsel? Surely it is as a pure delight for the eye that this splash of carmine is produced next to the black of rotted oak and the vivid green of mid-winter moss fringed with the feathers of hoar-frost.

THE BEE IN WINTER

AT about the end of October, flower and bee bid one another good-bye for a long, cold, and dreary while. It will always be another flower that keeps the appointment—sallow catkin instead of hawkweed, red dead-nettle instead of rag-wort, colt's-foot instead of ivy bloom. Usually, it is a different bee, but the most worthy members of the bee tribe are wont to keep the rendezvous that they themselves as individuals have made. The great humble-bees, unskilled misers, simply go fast to sleep, and forget everything till balmy March calls them. Their workers are all dead, and in the spring they must be their own workers till they can rear the first citizens of their new colony. But higher, because more efficient than they, the queen-bee rests in her hive surrounded by a band of the same bees that did "stake boot upon the summer's velvet buds," or, at any rate, on the blossoms of early autumn. With storehouses and winter store, food and the apparatus for distilling the first nectar of spring, with her retainers and artificers, she sits, not asleep, not without carousing in her hall, facing the winter instead of ignoring it, watching for the dawn instead of passively awaiting a resurrection.

382 THE ROLL OF THE SEASONS

It was past the middle of last September when, for companionship and remembrance of summer days, we took our bees into the house. In Cyprus they habitually keep bees under the same roof as the dwelling-house. It must be pleasant to hear their murmur in the wall and exchange with them the confidences of the family and the city. It is a poor thing to let them stay out in the field as some do, far from the house, and often completely forgotten for weeks together in the depth of winter. Ours would have passed this winter in a skep in a cottage garden, which is almost as good as living in the cottage itself, if they had not been put in the brimstone-pit and sent to sleep for ever. There was not a bee moving on September 28, the day when we called for the condemned bees. The next hive was sending out rare foragers, but this was as still as the grave. We thought there could be no bees in it, but when the hive was turned upside-down, it proved to have a greater population than the other. We took but half of them and their young queen into our little hive of four half-frames. We wished to see how small a lot would come through the winter, carefully treated.

In their new quarters the bees that had thought to have finished their summer's work awoke into new activity. A change will always so energise the bees, and some beekeepers use the fact to get the utmost yield of honey from a hive. Ours, though living in the room, were given flight under the window-sash till the end of October. Till the end of September they worked every day, some of them that had evidently discovered a bed of balsam somewhere

coming home like dusty millers. At the same time, they were taking syrup through the top of the hive and storing it at the rate of nearly half a pint a day. The wise beekeeper finishes his feeding before the end of September. It has not only to be stored, but medicated, by the bees, and capped before it can be a safe stand-by for winter use. The production of wax, even for capping, must be a wearing process. The handful of bees in our little hive only twice got up the wax-producing temperature, which seems almost like that of boiling water, and when they had taken some four pounds of syrup they ceased to take more. Towards the end of October they gave no signs of life for three or four days at a stretch, and then, on a fine day, would come out and fly round in a cloud for exercise, while even so late as October 14 one or two of them came home with signs of having visited the balsam blossoms—so much had they been awakened by transfer from their cottage-skep to a frame-hive in London.

At the end of October they had another change of locality, and at the same time were closed in the hive and kept entirely in the house. They stood upon a dressing-table, and were thus under close observation at shaving-time. It was high time for them to be asleep, or at any rate to stay entirely at home. For the most part, the only sign of life was the daily conveyance of a little chipped wax and other débris to the farthest limit of the porch. Sometimes the little scavenger of the day could be seen at its brief work. A week or two later there was sometimes the body of a dead sister to be brought out, and when these grew to an average of two a day the bee-master

had anxious moments. Sometimes, so quiet and without sign was the community, he thought they must all be dead; but the next inspection would prove them alive and well.

The bee-books tell us that a hive must have for its winter sustenance from twenty to twenty-five pounds of honey. It is further stated that a few bees consume as much as twice their number, the problem being to convert so much sugar into heat as will keep the temperature of the hive habitable. Ours, which at first had seemed a solid hive-full, scarcely covered in October one full frame. The four pounds of syrup they stored before November was nearly gone by December 12. They had been living on this as well as storing it for ten weeks, which gives them little more than half a pound a week, or only twelve or fourteen pounds for a six months' winter. In the cold weather the stores went even more slowly than that. When they had finished the syrup, we gave them candy, of which they consumed half a pound in thirteen days. Then we moved them out of doors, the double-walled nucleus hive standing within a full-sized hive, also double-walled. They had cold weather, then a week of extraordinary mildness, when they came out quite busily, then fierce frost. Their first half-pound of candy out of doors lasted them more than twenty-four days, or at the rate of no more than seven pounds for the winter. There was, we are informed, not more than six pounds of honey in the skep whence our bees were taken, the swarm being a late second one. On the twenty-four pound basis, then, thousands of skeps must prove tenantless this

spring, for the cottager seldom gives artificial food. Or have bees the unsuspected faculty of apportioning a short supply so as to make it go as far as a superabundance? The great strain upon the stores comes, of course, when the young brood is being fed; but we claim to have proved, by summer experiment, that less than a quarter of a pint of syrup a day and a pinch of pea-flour will keep a comb of brood. It is likely that in a good year the honey-bee is self-supporting from the time of full sallow blossom onward.

The bee's great peril in winter is a sudden chill on a tempting day. Our bees were so clamorous to come out that on November 2, November 30, and December 23 we took them from the dressing-room and opened the hive on a warm window-sill. They chose safe days, and only flew for the few necessary moments. But once, when it was very cold outside, a few of them escaped in the room, and we had to catch them one by one and put them back. When one flew against the window, it dropped as though shot, and lay motionless where it fell. So do they fall when, venturing out on the wrong day, a drop of cold rain falls on them in full flight. If you take them up and put them in some warm place, as under the quilt of the hive above the cluster, they will miraculously come to life again. We wished to be so careful of each unit that we frequently revived our "dead" bees. Even those that had been hauled out to the porch by the undertaker-scavenger would return to life and go back to the cluster. In most cases, however, they shortly died again, and that time beyond recall. But our winter bees had been

so sweet in life that they were like the holy ones who see not corruption. Their bodies did not even stiffen ; under the microscope they were always like newly killed insects. We had a sneaking belief that in the sunshine of spring they would revive and take up their work again like young bees.

Those who keep vigil in the hive are always awake. A few are more awake than the others, some to broach the honey-cells and feed the others, which take the nourishment almost automatically, some to keep the hive clean, others to fan a little when the state of ventilation demands it. Some say that the queen is the most alive member of the community, and even that she keeps the others awake. We have not found it so. Her serenity seems at least equal to that of her semi-sisters. But in this respect, no doubt, there are personal differences. An old queen may have a St. Vitus-like fidgetiness, constantly peering into cells, as though about to begin laying. The healthy queen forgets all about such things till the first bit of outside pollen or the pea-flour substitute of the artful bee-master bids her once more be fruitful and multiply.

THE ROBIN

WE spread some crumbs on a suburban lawn, and in a short time there came for them sparrows, starlings, tits, blackbirds, and the robin. Dowdy, tumultuous sparrows that snouted the crusts about as long as there were crusts, starlings that walked round and round and dragged at the tender side of a lump of fat, blackbirds that just looked in between two courses of worm, tits that demanded and got a cocoa-nut to swing upon—and the robin.

There is nothing plural or multitudinous about the robin. He is a bird alone and apart, never in winter condescending to the company of any other of his own or any feathered species. As we write, the great tits have the monopoly of the cocoa-nut. The bird that hangs there and takes plunges half out of sight for the woody white meat is magnificent in his blue-black setting to the Gladstone collar beneath the eye, in his saffron waistcoat opening to show a black stock within, and in his bright indigo back, shot at the edges with coppery green. But you could not in justice take his portrait without including also that of his mate waiting close below and pushing him from the cocoa-nut before he has quite finished his turn. But beyond them,

on some upstanding mound in the newly turned garden, on the spade-handle, or the barrow-shaft, sits the familiar red-breasted robin. It is his garden. He sits in it where he will. His man dug it while he watched, and he likes to spend a good deal of his time among the clods, the purpose of which he alone of all the birds understands. Every now and then he comes to the lawn and clears away the rabble gathered there at their ignoble feast. The sparrows eat for eating's sake, but the robin, when he has driven them away, merely pecks at the food for possession's sake. You can never say that you have seen the robin "on the feed." He is never pressed for time like a hen sparrow, that sits and gobbles as though for dear life; he never condescends to struggle with his food like a blackbird with a worm, or a thrush hammering out a snail; nor does he hunt a wall or minutely search a tree-trunk for grubs like a tit. As he dances about, intent, to all appearances, only upon the dance, his bold eye is aware of some morsel small enough to be eaten with decency, and in the midst of a figure he takes it, checking less than did Atalanta when she stooped in mid-course for a golden apple. Napoleon, von Moltke, Frederick the Great, Charlemagne, and the other conquerors, we may be sure, had the same kingly control of appetite. Our robin, at any rate, could not be the king he is without it. If he should go and guzzle like some common sparrow in a corner of the garden, in that instant the rabble would gain a footing from which even his imperiousness could not dislodge them.

We may be sure, too, that the robin owes his

ascendancy over the other birds a good deal to his winter bachelordom. You cannot for ever keep in order your own flesh and blood. The most docile of wives would sometimes take the crumb before permission was accorded, or obey a command with less than perfect alacrity, an example that might be driven to almost any length by those revolutionary sparrows. So not even his spouse may be allowed within the four corners of the winter sphere of influence. She has somewhere or other her own sphere, which she rules with the same relentless vigilance. Or is it that some convention against nature has separated the robins, and that their impatience of other bird-rights is the result of unhappiness? Is he in winter like a rogue elephant, his hand against every one, because the world seems all out of joint? Cause and effect have no doubt alternating rôles in this, as well as other respects. Who shall say, for example, whether the unique colouring of the robin is the cause or the result of his aloofness among birds? The red of his breast is neither that of the chaffinch, the bullfinch, the carmine of the goldfinch's cheek, nor the fire of the gold-crest. It is, of course, a thrush's red, for the robin belongs to that tribe. There is a little of it under the wing of the redwing, and something a little like it on the lower part of the redstart's breast. It may be that if you could separate out the colours of the nightingale, the back would be left greenish orange like the robin, and there would be obtained enough of the right kind of red to colour his throat and chin. The first robin had a mere chin-fringe of red; his own sense of uniqueness started the race on the course that

has made it now the most aloof and the most distinctly coloured of all our birds.

In the invigorating days of autumn, our robin came little nearer than the other birds. He deemed it, however, much more important than they to keep us under view. He liked to see, or perhaps to smell, the brown earth as it was being turned over, and he would follow us or precede us as we went from one end of the garden to the other. That is the charming way with the robin. Wherever he is, round the house or far out in the woods, he is always on the look-out for some human friend. He nests as near to some path or frequented road as he can, so that he and his mate may see men go by. Perhaps they get a benefit more tangible than even the inspiring sight of our noble figures. We have heard of a pair that came and fetched a man with plaintive, beckoning cries, because a rat had broken into their nest. Often must our steps or the trail of our scent make nervous some marauder that would otherwise have found and eaten the young robins. The robin has even its own peculiar smell, perhaps moulded on its perception of ours, a fascinating subject that we dare not pause to pursue.

When we first offered our robin a mealworm he seemed offended. Determined to begin with a very thin end of the wedge, we put it on the path and went away to our digging. The bird, knowing that we had put food for him, nevertheless came after us and sat on the wall as much as to say : " It isn't your grubs I want, but you." But he could not keep it up, and just had to go and get his grub, and then come back to the digging. Many a mealworm has

he had since. First he came to the bird-table, and took them as we stood near, then he took them from the box while we held it in our hand. Lastly, he dispensed with all formality and took his food from the fingers, as all robins should. He knows the box, and he knows the whistle that always accompanies the offer of the delicacy. He comes to us wherever we happen to be, and, when we are not outside, he comes and looks into the windows to see where we are. Still, he does not come into the house after us, as did the robin to a friend, using the letter-box when the door was shut. Just now, in fact, our robin is rather shyer than he has been. When we had got him up to the last pitch of friendliness, the weather broke; the frost went out of the ground, bringing edible things to the top; gnats and small moths began to fly again, so that mealworms out of a tobacco-box are no longer indispensable.

The white man must have his robin wherever he is. Oliver Wendell Holmes laments for the American because his robin, instead of being a domestic bird that feeds at the table, is "a great fidgety, jerky, whooping thrush." It is, indeed, no better than a fieldfare, gregarious, chattering, predatory, and migratory. The last word damns it worse than all the rest. The robin must share our climate cheerfully all the year round. He must cheer us on the darkest day with his tinkling song, which is to that of the nightingale as the cold and greyness of December are to the brilliance of May. If there were no robin we would choose in his place for domesticity the hedge-sparrow, which sings just a little shivery

winter song, evidently admires man at a distance, and could be induced to make close friends. On some other grounds we would go to the stonechat, as ruddy of breast, with the added glory of black head and white collar, an all-the-year-round bird that comes to the homestead in winter and will accept a winter pension. He would never, however, come to our suburb, and if he did, would not crack jokes at frost and snow like the robin. The stonechat seems to sit on one post with his shoulder-feathers hunched round his neck, all through the dreary time till the gorse bushes are warm again. There is no bird for the winter garden, for the Christmas morning song, or for our Christmas-cards but the robin.

He is our own particular robin. Always in the garden, or ready to appear there at a moment's notice. We know that he is also the particular robin of several other gardens, or that he persuades each of the owners that he is that one's own particular Christmas guest. But he never comes flying from afar like the sparrows and starlings. He just appears on the nearest wall or on one of his favourite tree perches. He might as well rise out of the earth, so mysteriously does he incarnate. "You needn't call as though I was in the next parish," he seems to say. "I've been waiting here for the last half-hour." Towards evening he begins to get rather more distant. If he comes for food, it is with just a "tick" of his alarm note, and then, when a shade or two of twilight have fallen, he begs to be excused while he attends to some of his private affairs. He would not for worlds let you know where he sleeps. Most birds

are shy about that, though we do know, as a matter of fact, where the sparrows have their crowded dormitory and where the blackbird sleeps fitfully. The robin retires far later than they. He is "tick-ticking" about after the lamps are lit, and in the dusk his olive-green livery is nearly invisible. At last, the little moth-like shadow melts into the gloom and does not reappear. Somewhere or other, apart from the rest of the bird population we may be sure, the robin tucks his head under his wing and sleeps.

THE LIFE OF A FOX

THEY found him in the withy-bed by the mill—he had a wild-duck there only a week ago—and chased him without a break right away to Honey Lane, a good ten miles as the crow flies. There he gave them a loop that would have taken a good deal of unravelling, but some one gave the trick away, and they were on his scent again within ten minutes. It was all up with him then, with those great hounds running almost fresh, and himself the worse for a week's irregular feeding. Nobody expected him to put up another ten-mile run, but this is just what he did, taking them close up to the gates of Brotheridge Park before Music ran into him, and received a snap in the face that she will remember.

He was a bit of a nuisance to us this winter. Many a man, however, who has done a hundred times as much harm, has passed away under a mound of flowers and deeply regretted. Vulpes was about four years old, perhaps five next March. This is the third winter that his bark has been heard in the night, seldom unanswered by the scream of his vixen. Their cubs were gambolling in the hill-field last May, Vulpes making shy and phantom-like appearances, at any rate while we watched, just dropping a freshly killed

rabbit and floating away as though his speed had been of wings rather than feet. The cubs grew up and dispersed into the woods, two of them falling victims to the opening meet, when young hounds are blooded; the others disappearing from the ken of this valley. But Vulpes and his mate kept the same beat; levied their customary toll on the hen-houses of their four or five mile radius; renewed their marvellous knowledge of the country that had so often saved their lives from the hot-footed pack.

A rather unwise change in the routine of our hens gave the fox a chance that he was not slow to take. The house was placed a little afield, in the hope that the fowls would forage elsewhere than in the garden that they had frequented too much. But they kept the same daily habits as before, returning in the afternoon to their home in the suburbs. Here Vulpes waited for them once or twice, and bore off each time some scatter-brain that had waited too long for the last worm. The only wonder is that he did not take them all, when we consider the desperate deeds that won for him the detestation of some of our neighbours. About two miles away was a stock of prize birds, the value of which easily topped ten pounds. A night passed in the usual silence, so far as the owner knew, but no ringing call of chanticleer announced the advent of day. Seventeen pedigree fowl lay dead in a rough heap on the floor, while the remaining two were, as they say in battle reports, "missing."

It is the midnight visit of "Mr. adjectival Fox," as he is called here, that is most to be feared. His far bolder raids on another neighbour resulted in

considerably fewer victims. Here, it was considered, he could be found during the day more often than not within two hundred yards of the holding. Sometimes, he would even make a dash on the hens as they crowded round the grain that the poultry-master had just thrown down. Once, this when the cubs were growing fast, the hens had no sooner been let out in the morning than one vanished "squawking" in the jaws of the brigand. In half an hour the fox returned, and went away with some reluctance when he found the irate farmer ready to receive him with a warmth I dare no more than hint at. Some of these exploits are more like the ignorant boldness of a young fox, but nothing is set down here that does not rightly belong to this particular four-year-old villain.

All the fowls that Vulpes took from our valley in the course of a year would scarcely keep one healthy fox in food for a month. Of rabbits, to which he is in the main quite welcome, he must have caught ten times as many. They seemed to know his rabbit seasons and his fowl seasons. When he was not out after rabbit, at any rate, they took little notice of him. Possibly they were as confident at other times. Certainly he seemed able to get rabbit whenever he fancied the diet. Best of all, he liked the young things not yet out from the "stop," but it seemed to be rather more the vixen's work than his to scratch out these tender tit-bits.

We were always astonished at the number of voles, short-tailed field-mice, as we call them, that Vulpes managed to catch and eat. We are not cursed with many of these unwelcome rascals, a fact for which

we seldom give due thanks to the foxes. A vole plague is no light infliction, and even a mild population of the creatures means considerable loss, as any one can see who digs up the winter hoard of one of them, or marks the grass that is kept short by a single small colony. The removal of a very slight check would enable a sprinkling of voles to bound into millions, and it is certain that on this account we owe a good deal to the fact that Vulpes and his friends have a sweet tooth for the "short-tailed field-mouse." Even in the winter he used to get this cherished dainty. When the snow was on the ground we used to find yards of the surface scratched up, and there or elsewhere unmistakable signs that the hunting had not been in vain.

It was when we were snow-bound with a crust of frost on the top of the snow that Vulpes seemed to be having his hardest time. One day Young Hopeful, aged nine, met him in the orchard. Vulpes was moping round, nosing the base of each tree, in the hope of finding a wounded fieldfare or spent redwing to stay his sharp hunger. He took scarcely any notice of Young Hopeful, who appeared to be unarmed, and the boy drew to within ten yards and tweaked him with his catapult. Vulpes started, more in anger than in pain, glared at the boy, so he says, and then picked up his back trail towards the hill-field and the woods. Through the hedge and up over the smooth white bank he went at a pace just over a walk, and the boy, tucking his catapult into his pocket, followed, lumbering and panting, behind. Of what he should do if he should catch up with the fox he had not the slightest idea. Neither did

Vulpes stop to consider that he would have nothing to fear from a man of this growth in a bare tooth-and-limb tussle. An unreasoning dislike urged the one to follow and the other to shun.

Once, said the boy, and the tracks confirmed him, Vulpes stopped and looked back over his shoulder. Possibly he was thinking, "Why cannot you and I be friends? You could put a meal in my way easily enough, and possibly I could repay you." Here, though the boy did not volunteer the statement, he stopped also. The tell-tale tracks made that clear. Perhaps he began to consider the consequences of catching up this sharp-toothed animal. Perhaps he happened just then to want new breath. May we even imagine that he instinctively accepted the truce proposed by Vulpes, with a view to peace and an alliance? There is no telling which first moved on again. Only the steps were resumed, first at a walk, then at a run, as Vulpes whisked over the big bank, then flashed into the gorse, long before the boy was able to see what had become of him.

The orchard will be a blanker place for the boy, now the red fox is gone. For ourselves, when we have added up the account, even though it includes a few ruined partridge-nests to his discredit, we find no cause to rejoice at his death. That remains for those who have chickens, but not voles, or who do not know that they have voles. Pheasants being accounted poultry also, as, indeed, they are, poultry-keepers are almost the only ones who will speak ill of the dead. The hundred horsemen who took part first and last in that twenty-mile run have nothing but praises to bestow on the gallant quarry.

THE WINTER GARDEN

WE are not about to write of hot-house flowers. They live a summer life in the midst of, but away from, the winter. More estimable are the flowers that brave the assaults of frost and snow, and the still more trying east wind, and present us with beauty in the midst of desolation. The winter blossom is as precious as it is rare. The daisy that opens now at our feet, or the catkin that swings on the bough, secures complete attention, which summer congeners usually fail to obtain. In the garden we can with care ensure, immediately after Christmas, a display of bloom that astonishes those who live in the belief that flowers belong only to the summer. It is a keen pleasure to take the uninitiated to our long border where the genus *Helleborus* is invited to flourish. Chief of them all is *niger*, with pure white blossoms of astonishing size and delicacy, and a great bundle of yellow stamens to lift it out of its order and justify the name of Christmas-rose. But there are others, each with its own note of beauty, each marked in flower and stem and leaf with delicate distinction. *H. angustifolius* droops its head more, and has the back of its petals purple, and we have usually to tilt up the flower in order to see that the

inner face is a green that seems trying to become white. The Caucasian hellebore is almost as white as the big Christmas-rose, but wears its flowers two or three on a common stalk. In shape they resemble the Maréchal Niel rather than the Gloire de Dijon. Another from nearer home is *orientalis*, which grows in Greece, and reminds us a little more closely of our own setter-wort, now blossoming in the wood. None is prettier than that same setter-wort, and none resembles it in its almost armful of winter growth of blossom-like green, whence the perfectly proportioned and daintily, coloured flowers open smilingly to the keenest winds.

The long border of Christmas-roses is further whitened just now with snowdrops and snowflakes, of which *L. hernandesii* is the earliest. And it is splashed with the warmer yellow of aconite and the purple of colchicum, with more orthodox crocuses galore to take up the running long before the present display is finished or tired of. There is blossom in the Alpine garden too. The chief of the groundlings is the Manchurian *Adonis*, pushing up great blossoms like a brighter and larger colt's-foot, but destined to unfold a leaf finely cut as parsley and huge as plane. The earliest of our rhododendrons has been blossoming for nearly a fortnight, and its branches are still lit with startlingly bright mauve flowers. It is *R. dauricum*, still too little known, and the most cheerful shrub that can grace an English garden. *R. compactum* follows closely after it, the buds already bursting their cerements, and by its side the especially precocious *Magnolia*, well-known as *stellata*, daily expands its hare's-foot-like buds under the pressure of the flowers

within. Eyes, descending to earth once more, are greeted with the full fire-blue gaze of an anemone that, under the shelter of a warm oolitic rock, has opened its astonishing petals. Blue as *hepatica*, which will soon join it, this rejoices in the name of *angulosa*, earned, no doubt, by some quality not apparent in the flower. There are no leaves yet, as is the case with most of the very early spring flowers. It enables them to make a splash on the bare soil that is far more effective than that of even the most solitary of summer blossoms.

The flower that we would like most to welcome in our Alpine garden as early in the year as this is the papery *Soldanella*, which at home is the earliest of the Alpines, yet sleeps in its English rockery even to the time of bluebells. If some year we may have six inches of snow on the ground for three or four weeks, we shall expect to see *Soldanella* come up as in Switzerland, as soon as ever the snow vanishes, or even making a little cave for itself under the frozen crust. But, paradoxically, our mild English winters seem too severe for many of the Alpines, and they keep time not by temperature but by length of day. We must go south for our precocious blossoms. It is thence that we have got our early brooms, that are now showing their cream-coloured folded butterflies among the small but wonderfully sheltering leaves. Thence, too, the winter-blossoming heathers, of which the best known are *mediterranea* and *carnea*. Every winter gardener must have these. They are a floral joy at the bleakest time of the year, and tender nurses just now to the bulbs that in March will shoot through their branches and use

them as a pretty foil for their broad, clean blossoms. From farther south still comes *Erica lusitanica*, a taller plant, now decked even more generously than *carnea* with creamy, almost rosy white, flowers. Beneath them is blossoming an early purple crocus that is labelled *imperati*. The shelter is evidently not necessary, for the same gem blossoms, this year at all events, on a higher and more exposed corner.

Flowers are not always the brightest things in the garden. Gardeners who deem it necessary to choose between winter and summer blossoms must at least have their winter berries. The brightest of them all are those with which *Skimmia japonica* plentifully decks itself. They are almost as clean and bright as the fruit of the wild guelder-rose in hottest autumn, and, thanks to their nauseous quality, now known to the birds, their number is intact. And the tips of all the branches above them are full of little flower-buds eager to present us with a further crop. Better still do we like the cottager's favourite, cotoneaster or rockspray, of which there are over twenty varieties, and the pyracanthus, but as Kipling would say, berries are another story. A beauty more nearly floral because it is vernal is that of the cornel, whose twigs are now blushing with sap till at a distance they look like bushes of bloom. They are coral. A rich yellow of the same origin is supplied by *Forsythia suspensa*, which is, moreover, almost prepared to deck itself in those trails of yellow bloom that make the whole shrubbery seem in flower. It is beaten in time if not in intensity of tone by *Hamamelis mollis*, which is, this week, easily the pride of the garden. Every little bush of it has the bare branches crusted

with the rich gold. The uncalyxed petals do not stand so thick as the later, though only slightly later, daphnes, but thicker on the stiff branches than the trails of *Forsythia*.

The sacred Glastonbury thorn is usually accounted a thing unattainable by ordinary garden lovers. Yet science knows it under the prosaic name of "*var. precox*," and it is not unlikely that a nurseryman would undertake to supply it. If the right variety is obtained it can be relied upon to blossom about the first week in January in fair profusion. This season it was forced out in November, and those shrivelled blossoms now accompany the haws of last summer on the tree. But now it is on the verge of opening fire again. The buds can be counted as easily as on the more usual variety in the middle of April, but, unlike that, *precox* blooms now without the preliminary of putting forth leaves. But with the mere mention of the calmias and of *Lonicera standishii* let us finish with the winter flowers in the more generally accepted sense of the term. Call them flowers or not, we cannot enjoy our garden without the rain of long, green catkins with which *Garrya elliptica* covers its brilliant evergreen at Christmas. And we are glad to see from the window, though not strictly in the garden, the soft silver buds that the willows and sallows are turning into gold for the ecstasy of the bees. Those who are for the spring stimulation of brood cannot have sallow catkins too near the hive, and, for other reasons, if they were not so common in the woods, most gardens would be proud to have a bush of them for spring flowering. The same or even more is to be said for fragrant colt's-foot or

winter heliotrope, whether we have seen it in our own woods or sheeting a glacier's bank in Switzerland. Earliest of them all, it is a most grateful blossom ; far too rarely found in gardens ; not merely a pleasure to the eye but, with the exception of "winter-sweet" (*Chimonanthus fragrans*), delicious *Berberis bealii*, almost the only winter flower that is scented. So winter heliotrope, last but not least of the blossoms here set down, shall bloom in our garden while the garden lasts.

THE SLEEPERS

IN the attic, where a half-finished piece of cabinet-making has awaited us several months, there is something hanging on the wall that looks like a faded black glove. It is a bat, called by our people here "leather'ing bat." It is stiff and cold—not merely negatively cold, but positively so, and when we have with difficulty unhooked it from its ledge it lies on the hand like lead. Only a fortnight ago it was flittering round the house and the cypress trees after rare insects. In less than a month, an isolated mild day may bring it forth again on a still more hopeless quest, for the majority of insects are past waking now, except in the immortal sequence of their eggs. They who moved a load of bricks last week found in the internal dry chinks a queen-wasp in her motionless, brittle-limbed sleep from which she would have almost infallibly awakened about the time of gooseberry blossoms. But they found also many flies, spiders, earwigs, moths, beetles, undoubtedly dead, and most of them representing species of which not one individual now remains alive. Perhaps there is more that calls for wonder in the egg that can be cased in ice, sodden with winter slush, parched, frozen, broiled, and yet retain its spark of vitality

and keep appointment with its caterpillar for a given week in May, than in the furred animal that sleeps like the dead in a dry attic. It is hibernation, though, that most readily wins our admiration—the care of an apparently sapient individual for its own skin, the mechanism of a grown and intricate organism that allows an apparently total abeyance of the vital functions and an ensuing resurrection.

In our temperate climate hibernation is very slightly and fitfully practised. When the globe has swung down, down in its northern trend till it stops for a day or two at the lowest point as though every year there was some doubt whether it would ever face the sun again, many things are asleep—badger, squirrel, dormouse, vole, shrew, and in a real cold winter several other considerable animals. But there is probably not one calendar month in which any one of them has not been seen abroad. The mildness of our winter is often their bane. It would be better for them to sleep soundly till the whole world was ready to waken at once; honeyed flowers for the bees; insects and herbage as food for hedgehog and vole; frogs, mice, and eggs in the nest for those of grosser appetites. The fat accumulated at the autumn feast would serve a sleeping animal as well for four months as for two, while it is very trying and often fatal to awaken in the middle of a foodless night under the impression that warmth and plenty have come again. The tragedy presents itself every year in the shape of slow-worms cut off by sudden frost from the return to their hibernaculum, of dormouse or squirrel dead beside the emptied store that should not have been attacked till March, of thou-

sands of caterpillars that have bored up through the snow which, falling on a warm earth, has given them the sensation of spring sunshine. The winter butterfly is a more marked phenomenon, the small tortoise-shell coming forth on any fine day after January has opened, but whether to perish or to go to bed again and appear again later we cannot say. Probably it is only the best sleepers that make that braver spring show when the nettles are up for the grubs to feed upon, and there will be no more relapse into frost and snow. The peacock and the red admiral, on the other hand, are more thorough hibernators, the latter waking so late that there are not a few naturalists who declare that it does not hibernate at all, but is blown here from earlier countries in May after the first spring brood.

And what is happening in the hive whence comes the soul of the garden as soon as the golden crocus-chalices are full of pollen? Scarcely a week ago, there passed in and out the narrowed door a few of the workers flying in a forlorn world for exercise or from sheer restlessness. There were even one or two that made a half-hearted attempt to respond to the untimely invitation of the wallflowers. But now the hive is like a city of the dead by comparison with the summer throng that we saw with Shakespeare's eyes:

"Stake boot upon the summer's velvet buds.

Which pillage they with merry march bring home

To the tent-royal of their emperor."

He who has the somewhat cruel curiosity to take off the roof and lift the quilts shall see a silent throng

of bees hooked together and hanging between the warmest central combs. The queen, her season of egg-laying over, is no more regarded than the humblest worker (if there were among these Socialists degrees of humbleness). Those who have their feet on the honey-cells hand down the social sweet to others who pass it on and on, till every unit is fed and thus able to contribute to the warmth on which the whole mass depends. They are all unemployed. No work can by any means be found for them. So they live on the capital they produced in happier times. The sun still shines for them from the thousand hexagonal cells in which they had the prudence to store it while they might. Very soon now, the empty cells in the middle of their cluster-comb will inspire the queen with the idea of laying a score or so of eggs, and the old bees that disdain such work in summer will feed the young nurses of the next generation but one. A cold snap may give them a Malthus scare and provoke the hasty destruction of the brood ; but the first excuse for renewed optimism will be seized, and again tiny grubs will come in the drowsy hive. The willow-catkins of March will not lack their musical myriads.

Yet the solstice is not midwinter. Our almanacs, founded on the irrefutable testimony of the thermometer and we know not what other instruments, declare that on Christmas Day winter begins. The big frosts of the year, the snow and the biting winds come in January, February, March, and even April, and rarely, as in this week, in November or December. The townsman shivers at the thought of a country ramble on February 14, Midwinter Day, when never-

theless the skylark is singing, the partridge is paired, the celandine, dog's-mercury, and hazel are in bloom. There is a difference of forty-five days between the calendar midwinter and the solstice. On glancing through a record of first and last appearances we find that the bee's midwinter is January 5, the pipistrelle bat's January 30, the swallow's January 7, the chiff-chaff's January 3, and the wasp's January 8. Optimists all. The lengthening day is a fact and a hope that outweighs the cold inertia of the earth. Even the earth things feel the turning again towards the sun, for from Christmas Day forth the herbs one after another put out leaves and blossom. The helebore begins to shoot up baby green ; the spurge-laurel is visibly preparing its pale flowers, to be followed by the bright pink of its near relative, the mezereon ; the snowdrops are up, and the crocuses have nearly an inch of leaves tied in a sheaf for the protection of the glory that they enfold. Perhaps these precocious blossoms are responsible for the early rising of the bee ; perhaps they are due to the bee's industrious gardening. In the end there is no caller-up but the sun, and every spring (or must we say winter?) proves that quite a small whisper suffices for many of the sleepers.

FRESHENED BY FROST

ON a certain Tuesday that every reader may recall we came to the river on pike-fishing bent. There had been a little frost the day before—just enough to make the fish hungry—and it was in that evening that the fishing expedition had been planned. And now the world was clad in deep, silent white, over which a freezing wind drove a storm of snow that stung like ice-needles. The metal of our fishing-gear, which, we afterwards were to learn, would stick to the bare skin and almost drag the skin off, now chilled through the gloves and made the fingers as though the veins had turned to ice. When we turned into the Anglers' Rest to thaw out, the process inflicted indescribable agony. Then out again into the white world to the deep, black river, the only thing untamed into winter livery.

But even the liberty of the river had in a measure succumbed to that sharp frost, short as it was. It was caked across with a greenish grey mixture of snow and water, a nap of slush sustained by the first open weaving of the frost loom. The bait and lead could break their way through, and then the float sat on the ice, and proceeded to freeze there. When the run came, the float went, not under the water, but

under ice, and if the fish released it, it bumped somewhere against the ceiling, possibly making a dim glow of red if the ice was at its thinnest just there. The pike we struck came shorewards with difficulty, just giving us an idea of his length by a sweep of his tail through the crust, and then escaping without the frozen dinner he had planned for. When the flow over the weir strengthened a little, clear water came at the head of the pool, but a bait cast there never received attention. The fish kept under the ice, as though it had been warmer there than in the open water.

In the farmyard close by, the fowls had fed and retired in a cluster to their perches. The sparrows that would have come for the remains had been dispossessed by a cloud of starlings, not a whistle in them to-day, as they sat on the edge of an apparently empty trough. It had contained food, and, after the manner of the fields that constantly present a new supply of worms, it might sprout a fresh supply of barley-meal at any moment. At any rate, the chance was better there than in the endless white of the water-meadows. A robin, out of pure friendliness for man, came and sat, as though for a Christmas-card portrait, on a twig of last year's water-plantain sticking out of the ice near our bank. A wagtail that feasted all the summer at the waterfall perched on a little iceberg that went floating round the pool as the Mayflies used to float. He flirted his wings in summer manner, and made a peck at the barren ice, as though it had swarmed with fat grubs good to eat. Lastly, a mournful little long-billed bird, a jack-snipe, came flying round the open water, passed just below the

tip of the rod, and, alighting, surely by mischance, in a square yard of open water, swan to the bank, and sat there, too glum to look for food in the most likely place within a two-mile radius.

Less than two days later the river was free again, the snow-sheet sank through the grass, the plastered ice came off the trees, the snipe went back to its normal quarters, the starlings chattered again and walked, sun-glancing, after grubs, the weather was as mild as in the pre-glacial period. We cannot find that any damage has been done to anything by the late frost. Cold does not often, if ever, kill our birds, and the spell was not long enough to starve them. It merely made them tame, either out of desperation at the loss of their food supply, or, as it made us, listless, and vaguely desirous of going to sleep till the hard time was over. Here was the opportunity of their enemies, especially the four-footed animals who do not often get on terms of such equality. But fox and weasel find a sudden snatch of cold even more soporific than the birds. Our fox does not seem to have moved while the snow was on the ground, and except for a blackbird that a cat has caught or found dead, the supply of birds is as it was.

The lake is still thinly and rottenly coated with ice. The moorhens sit hunchbacked high in the alders, as though they were afraid that the fox might stalk them across the ice. Their period of foodlessness is probably longer than that of the other birds. On the other hand, it is always a matter for complete wonder what the moorhens eat, even in an open winter. Some of the ducks have departed for a better foraging-ground. On the same errand came

a woodcock to the soft place in the wood that usually attracts the bird when other haunts are frozen. Though we have often had evidence that the feeding there is far from indifferent, it is a place held strictly in reserve, for as soon as the thaw begins there is no more hope of finding a woodcock within a mile of it. Wherever our late visitor may be, if he were shot to-day he would be found to be perfectly fat.

The tender, defenceless flowers have escaped no less safely than the birds and animals. Who would believe that those fragile blossoms which were lately the wonder of our record autumn could withstand that cracking frost and the drive of the ice-storm? We saw them yield point by point to the obliterating snowflakes, and expected to see them no more. In the blizzard they became *fleurs glaces*, but when the thaw unprisoned them, the tears merely rolled off them, and they smiled again as confidently as before. In their glass-houses the cold, half of which would have wilted them had they been bare, could not harm them. The ice-needles that were hurled against them, even if they had entered their tissues, would not have torn them as would drops of water forced in, then expanded on freezing. So the late frost has not torn the alder-catkins on which the tits wait, or the fir-cones whose seeds the greenfinches would gladly see; nor has it cut flakes from the wall nor burst the lithe branches of the ash, nor even spoilt the progress of the veronica and pimpernel that have covered the ploughing with plants on which you can still find blossoms.

It is a truism that a fall of snow keeps the earth warm. There is also a mechanical perfection about

melting snow not so frequently remarked but none the less true. We must see the spring flowers coming up under the snow itself in the Alps to understand how they relish this, the softest of all irrigations. The snowdrop shoots have grown perceptibly under the snow. When the sheet of white vanished from the fields, the white spots of newly opened daisies remained. The blossoms are in thousands, for we must not allow the daisy's glory to be dimmed by the fact that it groups every hundred florets or so into a separate head. We can follow the daisy-chain everywhere through the fields, standing at one flower and finding the next before we move on. The new honeysuckle leaves are as fresh as before the frost. The hazel-catkins are still within a sunny week of flinging their dust to the winds and to the little red fingers that sleep in the big buds beneath them. The earth is just freshened up after the snow, as by the dash of a cold sponge. But if the tightening of the air this evening means black frost on a world unprovided with blankets, there may soon be another tale to tell.

THE COW AND HER HORNS

WHAT would the cow be without her horns? The poets would be lost, from him who sang of the "cow with a crumpled horn" and of the "little Kyloe cow" downwards. "A bull by his horns, a wolf by his ears," runs the old precept; but the bull of to-day is led by the nose, and his horns are daily becoming a greater nuisance. We have only to realise the fact and to speak the word, when the horns will fall off as by a stroke of magic, and the cow of old poetry become as mythical as the unicorn itself. If we can have poultry without spurs, plum trees without thorns, cacti without spines, plums without stones, oranges without pips, so we can have cows without horns, even such paradoxes as shorthorns and long-horns as smooth-polled as the red Suffolk.

We saw the cow with a crumpled horn only yesterday. One horn, instead of pointing outward as a weapon of defence should, had turned in, and threatened the owner's eye, which, in order of growth, it would have put out if the farmer had not had the point sawn off. Her straight-horned sisters, playing together in crowded herd, are apt to do one another unwitting damage. It is not very uncommon, even under peaceful English farm conditions, for one of

them to get a horn caught and wrenched off, to the cow's great physical and nervous damage. Almost as often as not, a truck-load of horned steers comes into Chicago spattered with blood as the result, it may be, of a single tragedy. As cattle commonly go mad at the scent of blood, we can scarcely imagine the damage that is thus done to the intended meat. It may or it may not be that the wages of unnecessary cruelty to cattle intended for slaughter are cancer and other human diseases. We draw a veil over the horrors of a cattle-boat, and even over that part of them that can be ascribed solely to the possession of horns. Far slighter inconveniences than these are enough to abolish the decoration. Polled beasts can run in the yard and fatten there, while the expense and house-room needed for the tying-up of the picturesque, wide-horned steers are an increasingly important item to the farmer, the butcher, and the consumer. As the world gets a little more economical, even so slight an advantage as this will come to decide far more important questions than that of whether a cow shall have horns.

Advantages? We can only conceive of one—that horns may sometimes be useful for tying a rope to. It is an advantage that would be far more likely to appeal to the American cowboy than to the English cowman. Yet the reign of the polled beast is far more advanced in America than in this country. The Aberdeen-Angus Breeders' Association in the United States has more than a thousand members, and the register contains nearly a hundred and one thousand names. If the cow is to be taken primarily as a beef-producing animal, then the pre-

eminence in America of the "doddie," as it is affectionately called in its Scottish home, is well justified. The Aberdeen-Angus has held the championship at Chicago three times out of the last seven contests. It has won the prize for the best car-load five times out of seven, and for nineteen years the car-lots of this breed have topped the beef-market of Chicago. It does as well in its home, whither American and other foreign buyers are continually sending for the best bulls they can get. We will quote the new Board of Agriculture Book of British Live Stock, which gives, with strict impartiality, the good and bad points of every breed: "During recent years no breed has been nearly so successful in open competition with all other breeds for the highest honours at the Smithfield, Edinburgh, and Birmingham Christmas Fat Stock Shows. In 1909 it capped its record by securing the Open Championship of the Show at each, as well as the Grand Championship and the Reserve Number for the best steer of any breed at the Annual International Fat Stock Exhibition at Chicago."

We expect of the cow not only beef, but butter. It is doubtful, however, whether the world will be able to afford much longer to specialise for butter alone. The best milking breeds stand absolutely nowhere among beef-producers. The shorthorn is deservedly a greater favourite with professional dairymen than the Jersey, the Guernsey, or the Frisians (the importation of which from Holland is practically impossible under present regulations). The Aberdeen-Angus yields more milk, and richer milk, than the "best" shorthorn, though the non-pedigree shorthorn,

strictly selected for dairying purposes, may beat it in one if not in both respects. In Lord Rothschild's well-known annual test, the Suffolk red-polled cattle frequently beat the shorthorns and the Jerseys too. Individual cows have established milking records as remarkable as any, and as beef-producers these Suffolk reds are very little behind the Aberdeen-Angus themselves. The Pan-American Show at Buffalo in 1901 showed that the feeding of the red Suffolk for 100 lb. of butter cost 10 dollars and 27 cents, as against 12 dollars and 10 cents for the shorthorn. Thus it becomes evident that, small as the company is, the polled cattle are equal, if not superior, to the horned cattle of the world in every purpose for which cattle are kept.

It is not by chance that the polled breeds stand so high as cattle of all-round excellence. Horn is one of the most costly of productions, as we can see when the stag annually renews his antlers, and by marking the food-consumption and the relative growth of horn and meat in the young bull, steer, or heifer. A pound or two of horn the less means many pounds of meat or gallons of milk, or both, the more and the earlier. It is akin to the saving we make for the bees by giving them comb, instead of asking them to make it out of honey. We may take it that the abolition of the horn has already been decreed in the highest cattle circles. How will the ukase be taken by the old aristocrats of shorthorns, Herefords, Sussex, Devons, and the rest? In how many years are the breeders able to get rid of the unutilitarian horn without suffering their herds to be contaminated by a red-polled or "doddie"

bull? Unfortunately for them, acquired features are not inherited, or a stick of caustic potash, applied to the foreheads of bulls and cows in their infancy, might effect a short cut. There is, however, the authority of Jacob and his ring-straked cattle for the hope that a cow, never having heard of Weissmann, might occasionally present a polled calf to an artificially polled bull.

Possibly these premier horned breeds will be left in a side eddy by the rush of the modern preference (when it becomes expressed) for polled herds. The utilitarian will buy prize shorthorns, cross them with "doddies," and secure a great proportion of "doddie" offspring. The prepotency of the breed is one more strong argument for its excellence. Every bull or cow taken from the horned herds for crossing narrows the circle of aristocracy. Every herd dispersed brings nearer the days of in-and-in breeding, and extermination of the breed affected. If this is really the decree of the utilitarian, we can see the day when shorthorns will be as rare as Chillinghams, and people will travel miles to see what "the cow with the crumpled horn" was really like.

THE ROBBERIES OF THE SEA

A FURIOUS east wind drives along the coast, but under the lee of a sandstone cliff we are in a garden of bliss, the warm sun pouring on us from a sapphire sky, and scarcely a trace of the cold wind reaching us. Even the spring flowers are still blooming (or already blooming) in this notch, where the wind-shorn blackthorns make walls almost as impermeable as the red brick that surrounds a favoured garden. We have just had sight of a primrose open in its rosette of leaves, and by its side the rolled bud of its successor, while in several corners of the thicket the full pink of the campion gladdens the eye and the heart. But here we sit facing the sea, its waters now piled at the high-tide mark. They are the colour of lead with the charge they have taken from the blue clay that prevails lower, and now the leaping, rolling, lapping, smashing, backwashing waves are attacking the grass banks and the tough roots with which the gorse attempts to keep them for the kingdom of air. A piece of the bank that has fallen into the closer grip of the waves weighs probably half a ton, and seems toughly woven into one by the roots. The first wave lifts it tantalisingly towards the shore, but drags it down again amid the rattling pebbles. Another falls

headlong upon it, flattening its fibres, but extracting a perceptible amount of its solubles in the backwash. Another grinds it into the shingle, another sprinkles it with little stones; then one, sweeping along the shore, takes it in flank and rushes it down into the trough, where the rest of its disintegration is invisibly undertaken.

A few yards beyond, the waves are washing off a deeper soil from a layer of pudding-stone richly dyed with iron, the pebbles, loosely mortared as they are, resisting attrition considerably more than their covering. Next to this the little cliff rises sheer, or rather overhangs, where the sea pelts the rock with shingle, grinding it off according to the varying resistance of its strata, and driving a cave deep under its base, as though for an instrument on which to play a resounding tune. For centuries this bit of coast has been thus steadily ground down. Far out, at the low-tide mark and beyond it, the fossil forest testifies to the fact that once the annual commercial damage was still heavier than it is now. All along the cliffs behind us, cracks near the edge tell of further depredations almost infallibly marked out. The owner of a mile of this foreshore soon loses an acre to the sea, or to the more fortunate owner of some other ocean frontage. A few years ago, the sea was steadily gnawing into the railway track a little to the west of where we sit, and at high tide a big wave would sometimes hurl shingle on the passing trains. The company saw to the stopping of this advance. A groin or two judiciously placed turned erosion into accretion. The obliging sea, to which the necessary magic word had been spoken, now piles up tons of

shingle almost at every tide. To-day, at any rate, we can see clearly where the freshly washed stones have been swept over the bank and laid on the dusty heap that seldom knows the washing of a tide. And a little to the east can be seen very plainly the place whence this daily present to the railway company comes.

It is possible that the inhabitants, except they be landowners, fail to follow the slow process by which the coast-line is daily changed. We remember very well what this place was like seven years ago. Then, three great banks of shingle sloped steeply down to the sea, the whole forming a mound apparently twenty feet high. Now, when the tide is out, a flat table of rock apparently slopes the other way, standing a foot or so out of the waves and coming down under the foot of the cliff, which to-day the tide gnaws at when it is up. It is difficult not to believe that the land here has sunk bodily, letting the waves fly at the throat of the cliffs instead of at their knees. Of course, it may have done so, though the removal of the shingle towards the west by a newly directed scour of the tides can be found a sufficient explanation. It must be related, however, that the father of the farmer who now has the crumbling cliffs used to graze his sheep on a substantial strip of grass beneath the cliffs—acres that are now far under the waves. The inference seems clear that just here England is taking one more of those slow dips in the sea of which in the ages she has taken so many.

When the Royal Commission on Coast Erosion issues its report we shall get something like a general view of the robberies and the gifts of the sea. Most

of the stories told to the Commission are stories of robbery, and they come from nearly every coast. Lately we had news of a large fall of cliff at Cromer, a few years ago of one at St. Margaret's Bay, in Kent. The sea seems inclined to make two Isles of Wight of one by smashing in at Freshwater, where the broken military road, far out on the shore of the bay, shows how rapid the encroachment has been. Elsewhere, of course, notably at Hythe, the piling up of sand has made inland towns of what once were harbours, and the silt of large and muddy rivers has changed saltings into first-rate meadows. We know one landowner who, by merely sinking old barges full of stones, has induced the river to pile round them acres of rich mud, on which bullocks now make heavy beef. His tale, we suppose, will not come before the Committee, though if in another of his estates Neptune should have robbed him, the nation will hear of it. It may be that by the silt he has taken some one else is the poorer. Here is the exact reversal of the usual land problem as indicated in the phrase "unearned increment." The industry of one man in setting up groins or retaining walls not only leaves his neighbour's property unimproved, but often causes it to be worsened. The sea may next creep round the improver's land through the other's neglect and, taking it in flank, sweep it worse than if he had done nothing to protect it. Yet, on the whole, it is true of maritime neighbours that when your land consumes, mine is in danger.

From the ordered, mechanic action of the tides in a river we have evolved a simple enough code of rights and duties obtaining between neighbours. Each

must keep his dam at the prescribed height, and keep it water-proof. The vagaries of ocean and their intensification under groining and other diversion of currents create many paradoxes besides that of the best neighbour being the worst. There are groining and counter-groining. The scour that has been handed on from A to B must be passed on again to C, or returned to A with interest. Then what of the hinterland proprietor who might expect to come into the firing line more quickly if those on the frontier were not so active? The man in the front calls upon him, with show of justice, for contribution to the expenses of their common cause. But is it common, when we remember that, if the hinterlander could come up to the sea with reasonable chance of staying there and not going down into the waves, his property would often be more valuable than it is now? At any rate, it is an affair of interest to the nation at large, and it is upon the Exchequer that our sea-coast landlords call for a contribution to their expenses of maintenance. In this case, if in no other, the scheme must be just as national as the support. We cannot subsidise A and B to throw shingle at one another to no nationally useful end. Let the State protect its own coast-line from the sea as from any other national foe, and even push the war into the enemy's country by reclaiming the Wash, planting the dunes, and finding work for its waste labour on its waste lands.

NEXT YEAR'S APPLES

THIS year's apples have for the most part been picked up from a rapidly accumulating carpet of leaves, which, however, worms and the rain are stowing at the roots of the grass for the needs of future vegetation. Every day a cleaning wind strips the trees, leaving the tith a diminished ground of search at each visit. Just a yellow pennon flutters here and there, like a builder's flag, to signify that the last of the scaffolding is coming down. The sunshine runs glancing up and down the clean, wholesome branches, turning some to silver, others to bronze. Old familiar beauties, not seen since March, come to light again at the removal of the leaves that had smothered them—the fork in a lime that joins again to make a lancet-window, the arch with a broken end from which springs up a new arch of airier construction, the inimitable curve of the branch fighting between gravity and aspiration.

On the trunk of a favourite apple tree flutters a little pennon that cannot be a leaf. It is not gay with autumn tint, but of a dull earthy brown. A delicate-winged moth has caught there, its long thin legs held so fast that the planes of its feeble wings cannot raise it free. The male of a winter moth, caught in the band of "grease" with which a fore-

knowing gardener has encircled the trunk. By the side of the moth is a ponderous little grub, with abdomen of distended satiny segments, and silky colourless thorax, from which sprout little stumps to show that a little more and it had been a winged insect. It is the female of the winter moth, more palpably than he caught on her way up the tree. After she had crawled there and stuck, he flew there to make her acquaintance, to become instead her companion in death. For here, says the fruit-grower, is no road for these baneful grubs going up after next year's apples.

Who shall say what number of fine, red, juicy apples have been saved by the capture of a single winter moth? There are no doubt three hundred eggs in our caught female, who, apparently, having given up all hope of reaching the branches, is now laying them on the "grease," fortunately fatal to the embryo as well as to the mother. Between October and January, if we keep the band fresh by occasional renewals, we may expect to catch fifty females on a single tree, and save the fruit buds of March and the blossoms of April from a wilderness of destruction. Sometimes the bands catch in those months hordes of little wiry caterpillars, showing that some prudent mothers have reversed the habit of their species by laying their eggs on the trunk below the bands, a sure method of escape where the banding has been done for the catching of the mature insect alone, and has been discontinued after Christmas. Sometimes in May a band will catch the caterpillars that have been blown from their feeding-ground by the wind, and are taking the only way back.

So here are some of our next year's apples—in this pot of tangle-foot "grease," with which we draw impassable barriers round the trees. There are others—in this roofed box, which any one knows now at sight for a bee-hive. Out of every million blossoms that the trees exhibit next April, some very few would be fertilised in an insectless world by the wind. Others the few early humble-bees would pollenate in their blundering, industrious, but irresponsible way, sometimes carrying willow dust to an apple blossom, sometimes hawthorn pollen to a pear. In certain parts of Normandy the girls cut branches of blossom from one tree, with which they beat the others, till out of the scented, beautiful confusion arises the fertilisation of a thousand blooms, that would else go barren. That would, indeed, make a beautiful picture in our humdrum English Georgics, the girls in white robes, their faces as bonny as the apple blossom, their laughter as sunny as the scattered petals. But there are economic reasons that spoil it for the farmer, so we keep in these boxes a million workers, that not only do the work for nothing, but give us honey for permission to do it.

There is no apple that is not the better for the ministration of a bee at blossoming time. The farther the pollen comes, whether from the next branch or from another tree, the lustier the fruit, and the better its chance of withstanding frost, caterpillar, or blight. Even an otherwise neglected orchard, in which the flowers are weak, can be quickened by admixture of pollen brought from a better cultivated area. The self-sterile apples of Normandy, which girls must thrash with other blossoms, are by no means so

rare as the world imagines. Out of eighty-seven varieties experimented with in Oregon, no fewer than fifty-nine were found to be self-sterile. The well-known yellow Newtown is fertile to its own pollen, but it was found that it was immensely improved by a cross from the next tree of another kind. We learn, from the Oregon report, that we owe to the bee every apple we get from Gravenstein, King of Tompkins, Monmouth Pippin, Summer Pearmain, and many others. Certainly many of next year's apples are contained in our bar-frame hives, and in the skeps of the cottagers.

Nearly all the apples of commerce come from abroad, from Southern Tasmania, winter-bound British Columbia, New South Wales, Victoria, anywhere except our own famous apple counties. Yet not in a ship-load of barrels will you ever taste an apple that nearly approaches, in flavour and ecstasy of juice, any one of a score of English apples grown at home. The old picturesque orchards, that look so nice in the landscapes of our artists, are, in a general way, treated very much like blackberry hedges, as a part of the farm that gratuitously presents us every year, or, perhaps, every other year, with a quantity of enjoyable fruit, good for cider or for home consumption, but not as a marketable crop. In a good year they are too cheap, in a bad year too scarce to be worth taking much trouble about, at any rate to the extent of carefully grading them, packing them scientifically, and getting them without waste to the tables of the town epicures. If these want to know what Devonshire apples are like, they must come out here, and pick them up under the

trees, and eat them with the dew on them. We are scarcely more likely to think of wrapping them in tissue paper, and sending them to London, like the peaches, that are far less choice, than of bottling our Devonshire air for town consumption.

When fruit-growers spend upon apples and pears one-fifth as much as the hop-growers on their feathery produce, the orchard appears from quite another point of view. It is not true that our climate is less kind to this fruit than many of those that send us thousands of barrels. Everywhere in apple latitudes the trees are liable to an attack of frost during the vital period of fruit-setting, and, where the true economic importance of the culture is recognised, this damage is no more deemed inevitable than wire-worm or smut in our other crops. There is but a week, or a fortnight at most, of this critical period. Frost does no harm to the blossom in bud, and is, in fact, then welcomed, because it keeps back the blossom, perhaps to a time safe from late frosts. Many a man knows early in the afternoon that a frost is coming that will blast his fruit blossom for the year. What sum will it pay him to spend in order to save his crop? Some American farmers keep their orchards warm on these critical nights with a hundred little oil-lamps to the acre, raising the temperature some ten degrees, and thus nullifying a spring frost. As a result of this method, thousands of boxes of fruit have been harvested in a district naturally void of apples. The cost of the heaters is less than a shilling each, while the value of the crops saved can easily reach £200 an acre.

Long ago, the writer, who is not a practical man,

thought that the right method to beat the spring frosts would be by lighting slow fires, that would produce a warm and heavy smoke, to hang between the trees on such still nights as usually accompany frost. The smudge fire is a method well thought of by our Board of Agriculture, and its efficacy has been vindicated where it has been tried. In the dead leaves of June, then, in the lank weeds uprooted from the garden, the damp straw of our stables, the clippings of the shrubbery, and much other unvalued rubbish, reside many of next year's apples. The careful gardener collects heaps of such stuff, and would like to burn it now. If he does, he may be burning next year's apples. There is one supreme week when such burning should be done—when the pink apple-buds have just opened, and when a kindly declaration of war in the keen afternoon air tells us that Jack Frost is about to descend on the embryo ribstons and redstreaks of next September.

BROKEN SLUMBER

IT is the season when the greater part of the out-of-doors world is supposed to be asleep. We see, on the face of things, little evidence of the multitudinous life that distracted us with its immense variety in summer, but it needs but little prying beneath the surface to find it in considerable force, and in not very comatose condition. A spadeful of earth turned up in the garden is fairly certain to reveal one of the fat caterpillars that battened lately on fuchsia or geranium. It is not tucked away for a very elaborate sleep—just coiled head to tail in a chance cavity of the soil, and it wriggles just a little in its slumber when we turn it out. A sharp frost or two will do us some service among these faintly sleeping devastators and mothers of devastators. We are fortunate among all the inhabitants of the forty-third parallel in these mild winters that encourage only a half-hearted hibernation, which becomes the sleep of rotten death when a sudden abnormal chill breaks in.

A little farther away, upon the moors, you will not find creatures taking their winter so frivolously. There, even the caterpillars that intend to take another bite in the spring before changing, take the trouble to wind themselves up for the winter in a waterproof and prac-

tically airproof case that will defy the keenest frost. They have the prospect of a good blanket of snow to keep out the most piercing arrows, whereas when snow visits our lowlands it is to the undoing of many creatures. We have seen it spotted far and near with the bodies of caterpillars, great and small, that have thought or felt that the sudden increase of temperature meant spring and all its bounties, and have therefore unburied themselves. Thus will a light sleeper kick the bed-clothes off before the coldest hour, while he who sleeps heavily is unconscious of, and unaffected by, all but the severest changes of temperature.

In the loose shelter of the ivy, and on the warm side of any board that leans against a wall, you will find blue-bottles and other flies resting. They are not even so nearly asleep as the caterpillars, for they walk drowsily up and down when they are disturbed, only just lacking the alertness to fly. As for their cousin, the drone-fly, he is still abroad in the sunny hours, pretending to take honey from the late ivy blooms and enjoying a warm perch on a sun-kissed stone. No insect is up earlier in spring than this, but there will be a month or two when the garden knows him not. To a far slighter creature belongs the honour of remaining on the wing the whole winter through, for on any sunny midday you will see a small company of gnats dance out from their shelter in the euonymus or other evergreen. There can be nothing for them to remain awake for but the bare dance, and we are inclined to say that the stoutest heart and the bravest spirit in the garden belong to this despised and disliked mosquito.

The sleep of the queen-wasp is by no means a half-hearted affair. In pulling down an old cottage we have found dozens of them. The walls were of double boards, the space between packed with moss, and we are told that they are uncommonly cosy walls. At any rate, it is probable that the queen-wasps have slept in the moss for nearly two hundred years past. When we found them in October they were crawly things, and sometimes they whirled their wings and gave out a sleepy, whispered buzz, but those that we find now are so stiff in sleep that we cannot move their legs for fear of breaking them. It is like a miracle when the warmth of the fire pours life into these brittle things and makes them "bizz," and even get on the wing to fly away. The armoured wasp and the softer tortoise-shell butterfly are true children of the sun. Its absence, even its semi-absence in the long twilight of the year, means complete sleep, and it is only when the hibernaculum has been chosen in a spot afterwards warmed by an artificial fire that they inspire newspaper paragraphs by coming abroad in the season of no flowers. Still more soundly sleep the humble-bees, because they always choose wilder spots to lay up in. We never see them again till their appointed time. They sleep so soundly that they can never know if the shrew-mouse finds them and eats them with keen gratitude—for the shrew-mouse that seems to vanish with the harvest, and in the more decided Continental winter does vanish, is given to a sort of somnambulance in this country.

Only the dormouse of all that ilk really sleeps in our climate. Even he sleeps with a store handy, and almost certainly takes a meal in his sleep. The voles,

on the other hand, scarcely makes a pretence of sleeping, or even remaining at home, though they do lay up a generous store of nuts, acorns, hips and haws, or whatever grain is grown in their fields. In the coldest months they are foraging to and fro for the food they do not require, driving tunnels under the thin snow, falling victims to the owl even in the grim winter nights, while their cousins, the marmot, the lemming, and their brothers, the Continental voles, sleep fast under the real snow of a more earnest winter. The one clause in the vole's rule-of-thumb that will not vanish is its habit of making a winter store. That comes of the instinct of acquisitiveness that belongs to every created being. What child that sees the earth strewn in autumn with nuts, acorns, haws, and rowan berries, to say nothing of apples and pears, does not wish to gather them into a hoard for no particular reason, but just because they are gatherable things? And so the children of the wild will gather them whether hard winter comes after or no, as the bees store honey even in a land of perpetual summer. It is not a painful necessity that impels them, in the first place, to lay up store, but one of the greatest pleasures in life, that turns out to have been sensible as well as pleasant. Even those æsthetic souls, the birds, are given to hoarding, though not, perhaps, to drawing upon the hoard they make. The bower-birds and our own magpies collect glittering and beautiful things; jays, rooks, and other crows bury walnuts, carrion, and other food; the coal-tits that come to the bird-table carry away far more than they eat, to lose it in imagined hiding-places in the shrubbery. The storing habit, if it can be called so in their case, has not been turned to account by the birds. Who, after

Gilbert White, can imagine a swallow moping through the winter in a hibernaculum? It is only the four-footed animals, and the wonderfully exceptional bee among winged things, that carry the carnal delights of hoarding to the length of making it a source of winter revel.

The reptiles are good sleepers. Their cold blood could not be moved to action by the warmest winter sun. Nothing short of the piercing rays of late April appears grateful to the grass-snake. His winter begins as soon as September is gone, and for him the thermometer thereafter only sinks farther and farther below zero. Secure in the fastness of some distant hedgerow or dry wall, the viper and the grass-snake never make a sensation by coming forth in the middle of winter. The slow-worm, on the other hand, equally a creature of the sun, does for some reason sometimes make the mistake of coming out to die on the frozen road. In a church not far away, many newts, both crested and smooth, are resting in the masonry, awaiting the call of the warming ponds in spring. For a Sunday or two, their sleep was so light that, when the church was warmed and the service well under weigh, they came out one by one into the aisle, much to the amusement of the children and the embarrassment of more nervous people. So do the bats stir in the high rafters, for, against all reason, the bat is, with us, one of the lightest of sleepers, coming out again and again as the winter wears, consuming a vast deal of energy in the chase of apparently non-existent insects. Even to stir in your sleep is to use up the food in your tissues. What a fearful draught must be made by the opening of all the tubes to the keen air of

December or January! When a merciful winter has stopped the heart with cold, you no longer feel the frost nor respond to it as a living organism; you use up the store of food at a microscopic rate, and in spring you perform the miracle of becoming a live thing once more. It is the half-winters that make the severest demand on living things, and no doubt produce the hardiest stock for any eventuality the world can offer. That is why the Englishman, the English rabbit, the English chick-weed, have colonised the whole world.

"THE CLANGING ROOKERY"

NUT HILL, across the thirty-acre piece, has a rosy outline against the western sky. The century-withered oak is sharply silhouetted in all its fingers, and up from behind it comes the first rook of the string that any evening this winter has come that way from the great fallows to their roosting-place in the woods. We think with Tennyson that it must be "the many-wintered crow that leads the clanging rookery home." But it is not yet home that he leads them, and his string is proportionately silent—until the roosting-place is reached, and the business of settling down for the night begins.

The string passes morning and evening within a hundred yards of the group of elms that holds the nests of last year, and frequently, both at morning and at evening, the rooks pay a visit to see that their summer habitation is properly weathering the storms. To-night, as in the golden glow of the sun's promise they approach the rookery, the troop, not excluding the many-wintered one, yields to the exciting suggestion it arouses, in a frenzy of "break-necking." As they pass, high up, a bird towards the rear suddenly dives towards earth as if shot, then, two hundred feet lower, retrims his wings, and allows the impetus to

slide him up again. Meanwhile, nearly a dozen of his companions have followed his example, and the air is full of downward darting, upward gliding rooks, and with the excited clamour that accompanies the manœuvre. "Means rain," says the gardener, who cannot resist standing to watch the performance he has witnessed annually for over sixty years. It may, for the rooks' resting-time falls in the time of the equinoctial gales, and "break-necking" means nesting.

Already the morning inspection of last summer's nests has become a little more than mere noting. A stick here and there has been readjusted, or just taken hold of and released, as we take up and put down again a garden tool that we encounter while the garden is in the hands of winter. Very soon, the ground beneath the nests will be littered with newly broken sticks, the peaceful "caw, caw" will be showered again on the house as though descending on the sunbeams, the slightly more agitated bickerings will be heard of rooks protesting against the rape of their tie-beams by lazier nest-builders, and all the comedies and the tragedies of the rookery, as far as we can understand them, will be re-enacted for our benefit.

The rooks will come again, of course, to our elms. There are other and more eligible trees. A neighbour has an ideal thin line of tall oak, into which he is taking pains to attract a rookery. He has woven baskets of green twigs, as much like rooks' nests as he can make them, and has fixed them in the tops of the trees, and this year he has filled them with waggon-grease, and has watched the rooks with pleasure come and help themselves to the questionable dainty. It is

a plan that has certainly succeeded before, and if some of the rooks that have roosted this winter with ours in the wood have been made homeless by the timber merchants, our neighbour may now get a "black republic" in his oaks. Though it is a question of a whole colony or none, we do not fear for our rooks. It is rarely that they change their quarters, except under dire compulsion, and when they seem to do so we give them credit for seeing some grave reason not apparent to us. No one suggests that the fact that their young are shot in May is a reason, and many go so far as to say that if this annual battue is omitted the rooks will protest, as though on Malthusian grounds, by moving to livelier quarters. A feeble rookery has before now been driven away by a pair of crows taking too frequent toll of their eggs or young, and we do not doubt that great colonies have sometimes seen fit to move because a new style of agriculture has deprived them of their forage.

The habits of the rook have always been, and will always be, a subject of great interest to man, especially as they are wrapped in a mystery that we can never hope entirely to pierce. The gardener believes, and is not alone in the belief, that the rook has become the wisest and most conventional of birds, because he has always lived within sight of human habitation. But the whole crow tribe, to which he belongs, is a wise one, and most of them are exceedingly chary, in this country, of coming near mankind. It is not so with the crows of India, or with the hooded crow when at home in Norway, where they hang closely about the house, and pick up, together with material trifles, doubtless many shreds of human wisdom. The crow

wisdom, in which the rook excels, is an almost uncanny development of communalism. Two crows going through a hostile country give a very good exhibition of the art of scouting, while an army of rooks has always been noticeable for the careful way in which it sets sentinels. The sentinel who starves in a tree, while his fellows are engaged in loot, is a fine exhibition of unselfishness for the common cause. If sometimes he swoops down without waiting to be relieved, have there not been also human sentinels who have deserted their post? The reflection leads us up to those old stories still told of corvine courts-martial, wherein defaulting sentinels and others are said to have been condemned and solemnly executed. They are possibly all myths, though we live in secret hope of some day seeing them authentically verified. But the undoubted things about rooks are, after all, interesting enough.

The social practice of the rooks has by no means eradicated their individual vices. The strong arm of the law, if there be such, is powerless to prevent one rook from pilfering in the openest fashion from the unguarded nest of another, so that during the building season there is almost always one rook guarding every nest, while another fetches the material. The grand offence against the community is to build in a tree, however near, that is not considered to be within the city boundary. Now, as in the days of Gilbert White, such a nest is "plundered and demolished at once." White also told us that some unfortunate young pairs are not allowed to build anywhere till the rest have finished. "As soon as they get a few sticks together a party comes and demolishes the whole." Our own

observation of these more or less corporate proceedings leads us to liken them to nothing so much as to one of those “rags” that periodically mark the annals of Army, University, or public school. The original rook attracts the attention of some self-constituted band of confederates, and the community is too little sympathetic to interfere in the individual's behalf. Let us hope that “rag” justice is somehow leading the rook towards some higher plane of civilisation.

It is not so much the bird's crimes against his fellows as his offences against mankind that concern the gardener. The rook has received the name of *frugilegus*, or fruit-collector. We know how worthy the name is when the walnuts are a little beyond the pickling stage. Then a frequent joy with him is to take an acorn or other handy object and play ball with it, dropping it for another to dive after it headlong, and become the dropper in turn. And a careful and apparently conscientious observer startled the world the other day with the theory that in spring rooks use small seed potatoes as gauges wherewith to get the dimensions of their nests right, choosing the tubers according to their memory of what an egg is, and then throwing them away with the rejected sticks that lie beneath their nesting-trees. Those potatoes, like the trials by jury, are something for the curious and not too sceptical to look for.

We do not value the rook for his fruit-collecting qualities, but his Latin name appeals vaguely to us as a shield of virtue. We expect him to collect wireworms and other grubs that we sometimes fail to recognise as a carnal diet. And now we are finding, as though it were a new fact, that the rook is so crow-

like as to like eggs and young birds, and seems to know no difference between the offspring of the black-bird and the pheasant. The story even comes from Scotland that this new (?) carnivorous habit has given many rooks there the black whiskers that belong to the carrion-crow, and that, generally, the rook is falling under the vices that characterise the villainous corbie. In so far as egg-stealing is a new habit, it comes of increased opportunities in the way of a flesh diet and increased restriction of the supply of lesser life that arable fields afford. While agriculture wanes, a passing phase we truly hope, the rook is not of the supreme importance he once was. But we hope the country will long hold those whose æsthetic joy in him overwhelms the annoyance caused by his occasional departure from usefulness.

STARLINGS

THE yellow leaves of the elm, the burnt umber of the chestnut, the red of the oak, the scarlet of the maple, fly down wind like clouds of butterflies. A cleansing gale spins them far afield, where each of them will become a tiny renovator of grass or flower of the earth. Some whirl up and dot the sky with pepper, all the colours turned to black against the glow of approaching sunset. No, those are birds far off, a marshalled host, wheeling as one unit, the items spaced as truly as though they were threaded on a netting of invisible wire. We can make the poor mechanical theory hold just a little longer if we imagine that an unseen hand now elongates the meshes, now pushes them short, so that the cloud of birds is now thrown into a line along the hill-top, now flung into a vertical column, now foreshortened into a single line, thin, but very black, now attenuated every way, even torn in two, the parts enjoying a brief autonomy, then welding once more into a single cloud of rushing wings.

Arrived at the wood, they either roll over and over along the tree-tops, rearguard passing to the van and

the new rearguard overleaping, or they settle like a very abundant black fruit and break out into a multitudinous whistling and cat-calling. But again and again they start into the air and resume their faultless evolutions, now withdrawing towards the amber horizon, now filling the neighbourhood with the rustle and rush of their myriad wings. The townsman asks brusquely what they do it for. He expects some material reason, such as the presence of some immense and elusive band of flies to be hunted. The true reason is too far for the townsman to grasp, so we compromise by suggesting that these evening evolutions are useful as a means of warming the flock for its cold vigil on the rapidly thinning trees. The truth is that these massed exercises which appeal to the human intelligence as the very poetry of motion are partly due to the fact that these are birds, partly because they are starlings.

Who is the starling? He does not fall easily into a class as any other bird we know does. The black-bird is a thrush beyond doubt, the martin is a swallow, the jackdaw a crow, the green linnet a finch. There are half a dozen tits, the whitethroat represents a considerable family, the pied wagtail has familiar congeners, but the starling persists in standing in a class apart. Did any one ever hear such a song as that of the starling, with its cluckings, chatterings, raspings, and clear whistlings? On any fine day the year through we may see him on the chimney-pot, with humped back, drooping wing, puffed-out throat, and wide-open beak, shaking out the music as though he were shaking out bits of the instrument at the same time. Those who have been in the beech wood

at sunrise in the summer know that one of the earliest birds astir is the starling, that bands of them inhabit the tree-tops as soon as they are gilded and before the sun is visible from the ground. They are paying rushing visits to one another, and whistling and clattering their hardest.

All through the woods there could scarcely be a hollow branch that had not a nest of starlings. They crowded round the house so much that one pair had to put up with an unaccustomed site in the brush of an Irish yew. One of the chief memories of May is the continual launching of single starlings, as though shot from so many catapults, out from its porthole under eaves or in hollow walnut, away to the buttercupped fields. Eighteen times in fifteen minutes the purveyors came home to one nest from a field a hundred yards away. Every time they brought something that the farmer was very glad to be rid of—probably a big white chafer-grub, a bunch of wire-worms, or a leather-jacket, which are, perhaps, the three worst of all our insect pests. The average nest has produced its usual two broods of six or seven young apiece, and the farm eaves alone are responsible for nearly two hundred of this great cloud in the oak spinney.

That is who the starling is, for we will say nothing here about his occasional toll of fruit—the fruit of his own agricultural endeavour. It is, after all, a small thing compared with the practical extermination of the May-beetle that has followed the extension of the starling flocks during the last thirty years. But why “starling”? If you ask the nearest farm labourer, you will get a clue that will save the trouble of referring to the dictionary. The starling is here commonly called

the "blacksteer," or simply the "steer." The dictionary just gives you "stare," and there stops, leaving you over an abyss that has no bottom. But "steerling" could not be better. He is the little black steer that sits on the flanks of the greater oxen or, walking among their feet, appears to be grazing with them. Perhaps our whirring cloud in the wood ought to be called a herd. Certainly it is far too well drilled to be called a mob. The sheep are just as much the friends of our walking, chattering, glittering starling. Even Leaflet 45 of the cold and proper Board of Agriculture and Fisheries breaks out into rank anthropomorphism and says: "Sheep regard starlings as their natural friends, and permit them to alight on their backs to take out the keds, ticks, etc., from their wool." We fail to imagine how a sheep could prevent a starling from settling where he will, if she should take it into her head to remove the permission. Who, in fact, has not seen a starling take the ruthless mouthful of wool from the tick-jungle to soften the lining of his nest? Still, an occasional act like that is not unfriendly, as friendships go, and we do not doubt that sheep and starlings are mutually pleasant to one another.

The massing of starlings in early autumn is a feudal business. An old pair, taking their seven or eight young to the pastures at the end of June, find themselves at the head of a little pack, ragged in drill but not inconsiderable in numbers. The first brood has scattered, and though the believer in family ties likes to think that it is they who first join their younger brothers and sisters, it is likely that they have gone far away in several directions and are forming new

alliances. The same feeding-grounds that sustained many pairs of birds have now to find provender for as many families, and it is not long before the tribes of the farm-house, or of the orchard, or of the stone quarry, or the willows by the brook coalesces into a good whirling crowd. It is an encouraging sight to see them working a field, the bright bodies of the older birds glancing bravely in the sun as they walk wadingly through the grass. There cannot be much above ground or in the first inch of earth that can escape them. But to-morrow it will be the turn of other grubs to be at the surface, and the field must be gone over again by these indefatigable agriculturists. We have followed them over the pastures, and have found thousands of little holes drilled where they have picked out wire-worm or some other dainty. The farmer has not a better harrow than a good flock of "blacksteer."

In August the starlings begin coming in large numbers to our wood for roost. At that time they come in little bands from opposite points of the compass, and at daybreak, after a whistled chorus, each band goes back to its own work. But as autumn advances the army keeps together day and night. Since hunting in bands is profitable, it seems that big bands are more profitable than small ones. The niggardliness of winter demands that the "far-flung battle line" should be very wide indeed. There is much to be learnt by patient observation as to how the flock takes advantage of the discovery of its units. There is never any apparent gathering towards a point where a rich vein has been struck. Possibly the advantage of going in a large band is that the birds

448 THE ROLL OF THE SEASONS

are not likely to work a field that has been recently raked by another squad. Possibly, too, there is no material advantage gained. It may be that the starlings go in large armies as soon as their state of drill makes it possible, just for the higher pleasures of airmanship and for the joy of numbers.

THE FERMENT

"THE field has got the measles!" cries a small girl just recovering from the popular spring complaint. She is right, for it has broken out everywhere into an irruption of mole-hills. We have been able to mark for weeks the industry of that underground population, as street after street has been added to the labyrinth beneath the grass. You can see the dry and fine-grained heaps that were thrown up last week, and can trace the row through degrees of increasing freshness till, if you are quiet, you can see in the freshest of all the sausage of clay squeezing from the crown and tumbling lazily down the side of the "wunt-heave." Out little dog, Guess, knows the sign well enough, and can even catch the "wunt" himself, the microbe of the field's measles which some farmers think of with unreasoned abhorrence, and others with unreasoned kindness. The anti-moles begrudge the labour of scattering the heaps, while the pro-moles rejoice to think that the number of worms is being kept down. In truth, the moles and the worms are rivals in the same good work of aerating, pulverising, and thus fertilising the soil.

The worms, as is well known, cultivate on a vastly greater scale than the moles. We have to look closer

for the signs of their digging, but when they are found they are more striking than the work of the mole. The soil is brought up from even greater depths, and it is more finely treated, even predigested for the use of the plants. Darwin has estimated for us the amount of the earth-worms' digging, and has told us that in ten years every particle of the field is renewed from below. If it were not for the worms, surely we should have to give our grass fields a double digging every five years, whereas our old pasture of a hundred years' undisturbed grass is the pride of the English grazier.

There is an object-lesson at work in one or two town museums of nature study that might well have a place in every village school to show more strikingly than by the light of statistics the great work of the earth-worm. A glass jar is filled half-way up with light-coloured sand, on the top of which is an equal layer of leaf-mould or garden-loam. Then, in the presence of the class, half a dozen earth-worms are added and the date of the transaction affixed to the jar. In a very short time streaks of sand run up through the mould and streaks of mould run down through the sand, and before a month has well passed the two ingredients of the jar are as well mixed as though a cook had stirred them. Yet the six-inch jar with a half-dozen worms is not a very exaggerated sample of the average field. We can dig nowhere without coming upon either the worm itself or the burrows from which it has eaten the soil and ejected it at the surface in finely masticated form. On a favourable night a few weeks hence you may see everywhere the foot-long forms of full-grown earth-worms

stretched among the grass or flying back into the holes like elastic suddenly released, as the tails twitch them out of danger.

This surely makes us anti-moles. Why allow them to bring up the barren earth of underground and, at the same time, destroy by thousands daily the worms that will not only dig but fertilise? But we have seen that last week's mole-hill is not as to-day's. The air has slaked the round clay lumps till the mould runs through the fingers like coarse oatmeal. It must be finer than that for the plants' sake, and finer it shall be. Now that the spring airs are stirring we can find the first handfuls of earth that powders in the fingers to an impalpable, unclinging grease of fineness. The most unimaginative must see that here is something beyond mere mechanical fineness. It is chemical, or shall we hasten conjecture and say biological? The soil has caught life from the sun, an annual new creation that would stand for a new world from top to bottom, even if all other existing forms should perish in an instant. Here is the true irruptive principle that gives the field measles, the spots of which shall be buttercups and mauve lady's-smocks and red ragged-robin and blue scabious and white moon-daisies and purple prunella and the thousand other flowers of May.

Moles, one to the square lug, worms, one to the square foot, bacteria, anything from a thousand million to half a billion to the pound of soil! In a few hours they can grow from hundreds to millions and billions. It is an incalculable saying, but something to account faintly for the fact that the soil that was yesterday lumps of clay is to-day alive. The roots of

the old trees know it, and the seeds that have lain dormant all through the winter know it. There are the wandering bacilli, whose function it is simply to transform indigestible manure into pap for the little roots; there are bacilli of prey, some eating good microbes, and some bad ones, some the indifferent; and there are those waiting to fasten on some special root that they have yet to meet. Dip a clover root into the mould and they will flock to it, forming on it the nodules that, long before the microscope and the agricultural laboratory, were guessed to have the power of extracting nourishment from the air. They are seemingly there for no good but their own. A weak plant succumbs to their too ardent attentions, yet in the main it is the clover that takes the upper hand. In fact, the clover cannot live without its very ancient parasite, of which it has made a servant.

Call and call again the trees, the grass, the flowers, the seeds, and they cannot get up till the ferments wake. The bacterium is the serving-maid, who must get up and light the fire before the others can begin the day. The earth is aflame underground long before the eye sees it. The scientist dare not liken the spread of the bacterial population to, say, the breeding of a flock of sheep. He cannot say even that it is a phenomenon of life at all. The agricultural chemist calls the swarming millions by a name that signifies stuff rather than numbers. It is bacterine, even broth, as though we should call a trillion sheep a broth of mutton. It is not only mutton broth, but the broth of everything that has been or shall be. It is the indispensable beginning of life for this year, just as it was after chaos. It was the bacteria, then the fungi

the algæ, the lichens, that dissolved the rocks and made of them mould in which fatter bacteria, and trees, and men could flourish. So the world could be obliterated, towers and pinnacles and all, by the simple expedient of destroying the "broth" of the soil.

For ourselves, we cannot tell where the tree ends and the soil begins. After the trunk there are the roots, the root-hairs, the micorhiza, the fungi, that are stationed on the roots, and the free fungi, that mean just so much to the topmost leaf on the tree as the leaves do themselves. In a cold frame we threw down some lettuce seed. The ill-prepared soil sprouted little patches of woolly mould. Rank enemy of man this, the stuff that cakes cheese or jam left in a damp cupboard ; the bloom of rotting autumn ; the very emblem of decay. Then the lettuce seeds swelled and burst, and there came out of them white roots, fringed thickly with white hairs, undistinguishable from the horrid mould of sour soil. But, on another morning, the roots had buried themselves, and every lettuce plant twinkled with two of the brightest green leaves. The roots had seen to it, the roots that came from the brown seeds, that perhaps were attacked by moulds from the air, which they defeated and enslaved, and made work for them in the soil.

Even the life of the tree is a ferment, and goes on for a while without assistance from the earth. The sycamore in the brush-heap is sprouting just as much as the tree from which it was cut in autumn. The little catkins of the yew and the box have grown, not so much by force of this year's awakening as in accordance with the programme laid down and provided

for last summer. The sun stirs them before the roots need be waked. The million grains of pollen in each of them have evolved from a mass smaller than any of them, have hardened and dried so that the smallest shake sets them flying in the air. They are not millions of perfectly shaped carven spheres, as the microscope would have it, but just one of the scents of this balmy day. To the gnats dancing above the yew they may be whirling stones that cannot be avoided and must be endured. To the waiting stigmas of their own kind they are as oxygen to hot iron, the thing that is thirsted for, and whose touch is destruction and change. Then they are myriads of stately trees that would in a short time clothe the whole country farther than we can see—if it were not that thousands of other forms have each the same ambition. Out of their unspeakable war comes the peace of an English landscape.

PRECOCIOUS KEW

MAN will never be cured of his admiration for precocity. It seldom means stable and ultimate success, it is the opposite of richness and ripeness; but, by its rareness and unexpectedness, the agony of a pale midwinter flower seems to us more precious than the million heads of the harvest. But afterwards come the very early flowers in their true season, and then our love is more sanely concentrated on the few flowers of March with a fervour for each species that is not possible when it is divided amongst the myriad blossoms of May. We watch the frequently halted unfolding of the first crocus with far more intentness than we expend on the first white lily; keep an annual record of the first celandine, though none of the first butterfly orchis; write poems to the daring daffodil, but none to the dawdling dahlia. We are never quite truly certain that summer is coming again, and must go out again and again to see whether the blackthorn will blossom or no this year; and when April and May have surprised us by coming up to expectation, we take June and July pretty much for granted.

For those who cannot go several degrees south to see spring coming in, Kew is an easy and a sure place

to get early and authentic news of her advent. It has a warm and a well-drained soil; even the wild things live there under something like garden conditions, and among a great collection of varieties those labelled *præcox* are naturally well represented. In moments of untrammelled speculation, the writer is tempted to wonder whether there is not something infectious in the atmosphere of Kew that makes outdoor things blossom early because of the February wistaria in the greenhouses, and makes normal blossoms open early because of the early varieties planted near them. It seems as though the buzzing of the bees round the unusual masses of Christmas-rose stirred up the daffodils before their time. However, in view of sufficient material reasons for the earliness of Kew, the fancy is easily dismissed. Certainly when crocuses were but peeping elsewhere in pioneer twos and threes, we found the well-rounded banks under the oaks and elms at Kew one mass of gold. The big patch of Mediterranean heather at the entrance to the Alpine garden has been for some weeks purple with blossom, waiting till a day of hot sunshine shall bring it a congregation of winged life worthy of the feast. The Alpine garden itself is a sunken dell, which makes very much for earliness. Out from the bare mould the early things that put blossom before leaves are sending up all kinds of brilliant gems. None are more beautiful than the hepaticas, whose blue and pink eyes are starred with stamens like eyelashes. The vivid *chionodoxa* opens with plaited purple down between leaves unwilling to loose it on the cold world; and it spends its life in daily spreading wider its blossoms, and daily turning

them into brighter blue. Saxifrage gems its limestone with wide white flowers, pigmy daffodils of astonishing yellow are an inch long in the tube on inch-high stalks, soldanella and primula, adonis, butterbur, and a daily increasing host force the pace of spring in this weather-resisting defile.

The hill on which the storks nest has first to cover itself with daffodils, after which it has other effects to produce throughout the summer. A few days ago all the daffodils pointed their folded buds to the sky. Now they are nearly all pendulous, and hundreds of them open. In a slight breeze they dance and fling their golden skirts as only daffodils can, and it seems as though at each sweep of the wind there are more of them that have unkirtled and joined the dance. Perhaps the secret of Kew's early luxuriance is caught here, for the ground is pierced so thickly with shoots that the contribution of the earliest blossom from each clump furnishes the effect of a general crop. In the open beds, comparatively wind-swept, there are primulas nearly as precocious as in the dell. Large trusses of close-packed mauve flowers are opening as complacently as though it were May, whereas the sunshine only makes it bearable for about three hours each day and the rest is bitter March. This is *Primula denticulata*, a most useful spring flower. We look in vain for lungwort, which has the knack of doing very well in London, and is now opening on a colder soil than this its blue and purple cowslip-like flowers.

Not even this strong array of groundling blossoms nor the smoking branches of the yew tree, nor the rosy-blossomed elms can prepare us for the shock of spring that awaits us in the rhododendron walk. The

little rhododendrons as big as gooseberry bushes, called *præcox*, are indeed covered with their rather dull mauve flowers, but some of the giants of the rhododendron walk are so flaming with crimson and scarlet that they can be seen nearly half a mile away. The great fire of blossom that does not culminate till May has well come in, is now so thoroughly under weigh that those who wish to see all its beauties must visit this end of the gardens at least every week. *Nobleanum*, now covered with richest crimson, will be a tale that is told before the April bushes open. So will fiery *fulgens* from Nepal, and many other Himalayans. Last year, it is well remembered, the first wild bees and the queen-wasps were busy at one of the best of these trees, *barbatum*, which has now finished blossoming without knowing a wild bee. The bees are punctual even when the flowers are early, and by that we know without looking at a diary that the flowers and leaves are earlier than the bees this year.

Kew is early in its crocuses and daffodils, and well planted with early blooming exotics ; but the traveller knows some more rugged and exposed countries that beat these fat and sheltered gardens at many points in the matter of homely well-established flowers. In the hills whence came many of the limestone boulders of the Alpine garden, some of the things that here are just straggling into spare blossom are in full luxuriance. That is especially so with the white arabis, called by the cottagers, "snow on the mountain," and by some, more affectionately, "welcome home husband though never so drunk." It would be hard to pick a dozen sprays in the Alpine defile, but the writer has seen it this week on its mounds in

cottage gardens, or hanging from cottage walls into the road, as white as the sheets that are hung out to dry on washing day. And in gardens where it is almost the only joy, its tenancy equal to that of almost the oldest inhabitant, the flowering currant can be seen among the hills in full blossom, though at Kew the bunches are no more than pink catkins peeping from the young leaves. Just so did the cottager's "fair maids of February" come up for him in their white-skirted thousands earlier and more abundantly than in the gardens of Royal Kew; and so did the ancestral mezereon cover itself with pink fragrance on cold clay and on harsh stone brash as early as did its battalions on this warm sand. One would think that these old-favoured flowers had a special delight in their owners who live and sleep so near them, and came up early for love.

The cottager is as faithful as his flowers. He does not introduce into his garden the early heaths from the Mediterranean, or the still earlier hybrid that the nurseryman has produced. These show us their tender promise before Christmas, and almost with the New Year their bells open, though with a pallor that only deepens into rose and carmine as the sun climbs to mid-February. And all the time their stamens hang out of the tube and ripen their pollen in the open frost, to shoot off like pistol shots at the touch of the first adventurous bee. We have heaths here from all over the world, some for almost every month of the year, many to take the place of the earliest as soon as they begin to wane. With them will come in the first brooms from Spain and Greece, mostly in very pale lemon, though some of the white dots now

showing will make surprising orange, and almost scarlet. The wealth of Kew, at all times incalculable, is never more striking than when we wander round these small shrubberies as soon as the first daisies are under our feet. Now they spangle the wide lawns with no mean sprinkling. It would not be hard to find half a dozen whereon to plant one foot and declare the summer.

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