NOTES ON NATURAL HISTORY.—JANUARY.

THE common wren, "Kitty wren" as the bird is familiarly called by children, is one of the few of the feathered race which remain near dwelling-houses nearly all the year. Like its companion, the robin, it seems quite indifferent to the cold; and it hops about as gaily when frost and snow are on the ground, as in the brightest days of summer. The female is very particular about her nest: sometimes, when she has half finished it, she appears to take a dislike to the spot; and, after surveying it carefully, and hopping from post to tree, and from tree to rail, and holding her little head first on one side and then on the other, as if she were weighing all the advantages and disadvantages of the place, she seems finally to make up her mind, and either sets to work to finish her nest out of hand, or she flies off to some more convenient situation, where she begins a new one. Wherever the nest may be placed, the wren is never satisfied with its situation unless it is well sheltered from the rain; and on this account she always chooses a nook under the thatch, the cavity in a hollow tree, the projecting bank of a hedge, a hole in a hayrick, or some similarly protected place. The material used in building the nest is generally that which is nearest at hand, and, of course, differs in different situations; one that was built near a schoolroom being actually constructed in great part of the scrapings and feathers of writing quills! The wren is generally very desirous to conceal her nest; and when she has brought a bundle of moss almost as large as herself, she will hop about from branch to branch, carrying her load with her, "anxiously waiting for some slow-walking passenger to move away before she ventures to approach the spot where the nest is in progress." Mr. Knapp, in his "Journal of a Naturalist," relates, among the stratagems of a wren to conceal her nest from observation, that she had formed a hollow space in the thatch inside a cow-shed, in which she had placed her nest by the side of a rafter, and finished it with her usual neatness; but, lest the orifice of the cell should engage attention, she had negligently hung a ragged piece of moss on the straw-work, concealing the entrance and apparently proceeding from the rafter; and so perfect was the deception, that it would not have been noticed, had not the bird betrayed her own secret by darting out. When the wren is sitting, if she sees any one approaching her, she gives utterance to a peculiar cry of rage, which sounds like "*Check! check!*" and she repeats this many times with vehemence, as though she were scolding outrageously, particularly when the intruder appears frightened and runs away; in which case the wren sometimes follows to a considerable distance, with loud manifestations of anger. The nest is very large in proportion to the small size of the bird, and so deep that the young ones are kept almost in darkness. The young are very numerous, as many as sixteen having been found in one nest; and both their number and the darkness of their abode have been alluded to by Grahame, in his poem on the birds of Scotland:—

COMMON WREN.

> The numerous progeny, claimants for food
> Supplied by two small bills, and feeble wings
> Of narrow range; supplied—ay, duly fed—
> Fed in the dark, and yet not one forgot.

The wren, in England, is generally kindly treated, even by boys; but, in Ireland, hunting the wren is a favourite pastime on Christmas Day. The hunting is performed with two sticks, one of which is used to beat the bushes, and the other to throw at the bird. Mr. Yarrell mentions that "it was the boast of an old man who died at the age of a hundred, that he had hunted the wren for the last eighty years, on Christmas Day." On St. Stephen's Day (December 26th) the children used to exhibit the slaughtered birds on an ivy-bush, decked with ribbons of various colours, and to carry them about, singing—

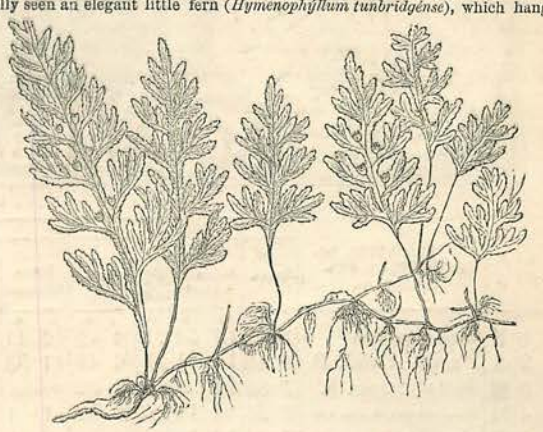
> The wren! the wren! the king of birds!
> The best of all that live in the furze;

and to collect money to bury the wren. In some places the wren itself is hunted on St. Stephen's Day. Happily, this barbarous custom is now abolished, except in some few places in the south of Ireland. The feeling of the children in England with respect to the wren is very different; as, so far from hunting the bird, or wishing to injure it in any way, they have a superstitious feeling that it is unlucky to hurt it, and, consequently, boys that delight in attacking every other kind of bird that falls in their way, respect the wren, and would tremble at the thought of killing one.

In January, vegetation is, of course, suspended; and the only green leaves that appear through the snow are those of evergreens, particularly those of the pine and fir tribe, which, when the snow is partially melted and again frozen, have a very singular and beautiful effect; as the delicate tracery of their branches, gracefully drooping from the weight of the brilliant icicles which hang from them, is so striking as to give the idea of the garden of a fairy palace rather than any object of ordinary occurrence. After a hoar frost, the trees are still more beautiful. Trees that shed their leaves are generally considered to present no beauty in winter; and yet it is impossible to look at the leafless limbs of a large tree in the depth of winter, particularly when the earth is covered with snow, without being powerfully struck with the wonderful difference presented by the tracery of different trees when no longer obscured by the leaves, and the outline of their numerous branches is clearly shown by the white ground beyond. Any one accustomed to trees could never, even in the month of January, mistake an oak for an ash or a poplar. The sturdiness of the oak, and the shortness of its trunk in proportion to its thickness, and the peculiarly rugged character of its branches, mark it as distinctly in the middle of winter as when it is covered with leaves, or even with acorns. The black Italian poplar, on the contrary, has its stem exceedingly long in proportion to its thickness; and its branches, though very numerous, do not extend far from the tree, and are extremely slender, generally producing tufts of small twigs at the extremity. The Lombardy poplar is still more peculiar in its appearance. It grows very high in proportion to the thickness of its stem, and its long slender branches all taper upwards, so as to give the whole tree the shape of a flame. The willow has long, slender, drooping branches. The plane trees generally retain their seed-vessels, which hang like balls on long slender stems from the leafless branches; and these trees are also known by their bark falling off in large plates, so as to look exactly as though the tree had been injured by some mischievous boy. There are some large plane trees in Hyde-park, which often excite indignation from this appearance in the minds of those who are not acquainted with the general habit of the tree. The American plane tree only ripens its seeds in this country in warm summers; and as, when the seed-vessels burst, and the seeds are scattered, each being furnished with a little white feathery plume, they have a cottony appearance, this tree, in North America, is called the cotton-tree. The black Italian poplar has its seeds enveloped in a white cottony down, which falls in such abundance when the seed-vessels burst, as to entitle it also to be called the cotton-tree, as the ground at the foot of the tree is often quite covered over with white cotton, which looks as though it could be used for carding and spinning. The catkin of the black English poplar, on the contrary, is red, and, when it falls, it looks so like the larva of the goat-moth, that children are sometimes afraid to pick it up. The elm, when devoid of leaves, has much less grandeur about it than the oak. The Scotch elm has widely-spreading branches; but those of the English elm are small, and somewhat slender in comparison with the size of the tree. The bark is also rough, particularly that of the variety called the Cornish elm, which is very rough, and has often deep fissures in it. The weeping elm is particularly beautiful; and though a few years ago it was comparatively unknown, it is now becoming common in plantations. The beech is remarkable for the smoothness of its bark; and the birch for its silvery hue, and also for the lightness and elegance of its branches, which, in early spring, are adorned by long feathery catkins, which are almost as ornamental as flowers.

The lower shrubs are seldom ornamental in winter, unless the season is mild, when the *Laurustinus* is covered with flowers. It is singular enough that the *Aúcuba japónica*, though it is a native of Japan, will bear the severest frost uninjured, though the sweet bay and many other similar plants are killed. The *Aúcuba japónica* is interesting in other points of view; and it is remarkable that, though it has been a common garden shrub in this country for the last sixty years, it is only a variety with variegated leaves that has been introduced, and it has never been known to produce fruit in Great Britain. The fruit is said to be a kind of nut, but, from the general appearance of the tree, it appears much more likely that it is a berry. It is nearly allied to the dogwood, and some botanists have supposed it possible that a hybrid might be raised between it and that tree. The holly, the ivy, and many other trees, are ornamental during winter, from their berries; and the *Chimonánthus frágrans* and the *Hamamèlis*, from their flowers. The flowers of the *Chimonánthus* are of a pale straw-colour, with a dark purple spot, and they are delightfully fragrant. The flowers of *Gárrya elliptica* also appear at this season, hanging down in long rows, like Love-lies-bleeding in form, but of a greenish colour.

When the ground is covered with snow, few ferns are visible; but, as soon as the snow begins to melt away, the rocks about Tunbridge Wells, and in many other places, are covered with the evergreen kinds; and among them is occasionally seen an elegant little fern (*Hymenophýllum tunbridgénse*), which hangs



HYMENOPHYLLUM TUNBRIDGENSE.

down, "clothing," as Sowerby expresses it, "the shaded, perpendicular faces of dripping rocks and caverns," with its filmy fronds, which lie over one another, "like the half-ruffled plumage of a bird," and form a kind of tapestry of half transparent, shaded green. These ferns are remarkable for the extreme delicacy of their leaves, or fronds, which become brown or shrivelled if exposed to the sun and a drying air even for a few hours, but which are extremely beautiful when quite fresh and moist. The species, though called the Tunbridge fern, is yet found in many other parts of England, and in the south of Scotland.

At this season of the year, the few insects that are still alive are mostly in a torpid state, except the cricket (*Achèta doméstica*), whose merry chirp is still louder in winter than in summer, on account of the additional fires that are required at this season; as the cricket, perhaps more than any other insect, enjoys warmth. When we hear the chirp of a cricket, we naturally suppose that it is a sound uttered from the mouth, but this is by no means the case. The cricket has two wings, which are covered with wing-cases of a leathery consistency, and these wing-cases the cricket rubs against its body with a very brisk motion, whereby it produces its sound. We are told that crickets are used in Africa to promote sleep; but in this country they appear more likely to destroy it, as the noise they make is sometimes so loud as to be extremely disagreeable. It has been remarked that the chirp becomes louder in proportion as the heat increases, and it is extremely difficult to silence the crickets in any way but by putting out the fire.

THE CRICKET.

Most insects die at the commencement of winter, leaving their eggs to continue their species; and these, by a wonderful provision of nature, they lay, late in autumn, on the stems and branches of plants, and not upon the leaves, as they do in summer—the wonderful instinct that has been implanted in them warning them that thus only can they secure the welfare of their progeny. It has also been observed that the eggs which are to be hatched in summer are fixed only very slightly to the leaves on which the young are to feed; but in autumn the eggs which are attached to the trunk and branches are fixed firmly and covered with the greatest care, so as to enable them to resist all the alternations of weather to which it is likely they will be exposed.

NOTES ON NATURAL HISTORY.—FEBRUARY.

In February, if the season is mild, some few birds begin to build their nests, and others to hop about and chirp cheerfully, as if feeling a strong sense of enjoyment at the first glimpse of the return of warmth and summer. To those who feel interested in the study of nature, every season has its charm; but, perhaps, at no period of the year has nature so many attractions as when every object around seems first emerging from the sleep of winter. In the depth of winter, when vegetation is quite torpid, the birds are silent; and even when they seem awakened to returning animation by the first breath of spring, their notes are weak, and their song is imperfect, the sounds being apparently uttered with difficulty; and, as the Rev. L. Jenyns observes, "to hear them labouring at a song, and only managing to get out part of it, conveys the idea of some physical impediment, which for awhile they appear unable to surmount." This is particularly observable in the chaffinch (*Fringélla cœlebs*), which generally utters its

CHAFFINCH.

first feeble notes about the first or second week of February, but which does not attain its full song till some weeks afterwards. When its song has attained its full perfection it is generally very regular, and consists of a definite number of notes. The chaffinch sings very early in the morning; and, indeed, in summer, Jenyns tells us, it begins at three o'clock. This bird is sometimes called the bachelor, probably from Linnæus having given it the specific name of *cœlebs*, which signifies a bachelor, because in Sweden and other northern countries the females migrate in the winter to a milder climate, leaving only the male birds behind; and these males must naturally have appeared to Linnæus so solitary that we cannot wonder he calls them bachelors. With us, however, as is observed in the "Journal of a Naturalist," the sexes do not separate at any season of the year, the flocks frequenting our barn-doors and homesteads in winter being composed of both males and females, which are easily distinguished from each other, the male bird being remarkable for the cleanliness and trimness of his plumage, which, without having any great variety or splendour of colouring, is so composed and arranged, and the white on his wings so brilliant, as to render him a very beautiful little creature. The female is as remarkable for the quiet, unobtrusive tintings of dress; and, when she lies crouching on her nest, elegantly formed of lichens from the bark of the apple tree and faded mosses, she would hardly be perceptible but for her little bright eyes that peep with suspicious vigilance from her covert." The same work informs us that in Gloucestershire these birds are generally called "twinks," from their constant repetition of one note resembling that word, when they are alarmed or in danger. The female chaffinch is very careful in building her nest, which is a very elegant one, curiously studded with lichens interwoven with wool, and lined with feathers and hair. She generally chooses the fork of a tree, or the centre of a mass of ivy, but in some cases she fixes her nest simply against the trunk of a tree, and in such a situation that it seems wonderful that the nest is not washed away by the first heavy storm that occurs. When the nest is closely examined it generally excites astonishment, from the neatness of its workmanship; for it is so firm and strong that it is difficult to pull it asunder. In summer the chaffinch lives principally upon insects, but in winter and very early spring it is apt to attack the seeds that are sown for the early vegetables, and also the first flowers of spring: sometimes the snowdrops, winter aconites, and the little red archangel will be found with the petals of their flowers lacerated as soon as they unfold; and sometimes the chaffinch may actually be seen tearing the flowers asunder to get at the pistil or incipient seed-vessel, which it finds at their base.

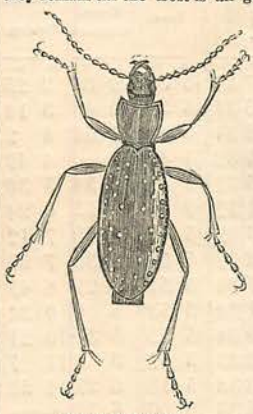
As the month advances, many birds are heard to sing, and among the earliest, after the robin-redbreast and the wren, which may be said to sing all winter, may be mentioned the hedge accentor, or hedge sparrow, the tom-tit, the sky-lark, the thrush, and the blackbird; and, in short, the melody of the woods may be said to have begun. "To me," says Mr. Waterton, in one of his charming essays, "to me, whom kind Providence has destined to spend the best part of my time in the open air, the song of birds is soothing beyond expression; and whilst I am admiring the beauty of the rising flowers around me, I know no greater addition to my gratification than that of listening to it. How enchanting is it to inspect the early snow-drops, those 'fair maids of February,' whilst the stormcock is pouring forth his newly-acquired notes from the top of a neighbouring elm! and how delightful it is to hear cock-robin's carol on the thorn that affords a shelter to the humble primrose!"

Sweet are the omens of approaching spring,
When gay the alder sprouts her winged leaves;
When tootling robins carol-welcomes sing,
And sparrows chelp glad tidings from the eaves.
What lovely prospects wait each wakening hour,
When each new day some novelty displays;
How sweet the sunbeam melts the crocus-flower,
Whose borrow'd pride shines dizen'd in his rays.
Sweet, new-laid hedges flush their tender green;
Sweet peep the arum-leaves their shelter screen;
Ah! sweet is all that I'm denied to share;
Want's painful hindrance holds me to her stall,
But still Hope's smiles unpoint the thorns of Care,
Since Heaven's eternal spring is free from all.—CLARE.

The flowers of early spring are, indeed, most highly prized, not only for their natural beauty, but because they come to us with all the charm of novelty, and as a promise of the further pleasures which are in store for us; and hence we seldom feel so much delight in viewing any of the most gorgeous flowers of summer as we do when we first perceive the graceful form of the snow-drop peeping through the ground, or the bright yellow of the winter aconite, succeeded by the richer yellow striped with brown, and the delicate white striped with pale lilac, of the cloth of gold and Scotch crocuses. These are followed by the primrose, with its pale yellow flowers peeping out from every bank, and the beautiful little white wood anemone, with the golden flowers of the buttercups, and the lesser celandine. But among these flowers, which have been so often mentioned, and whose beauties have been enlarged upon by every author who has written on the spring, there are others which have been passed by comparatively unnoticed, though almost equally common. In the depths of Epping Forest, particularly at High Beach, where the noble trees form avenues which look like the stately aisles of some magnificent Gothic cathedral, may be found a little British plant, which, when it first appears above the ground, which it does in the beginning of February, looks very much like asparagus. Its flowers open about the latter end of February or the beginning of March; and, strange to say, they grow from the centre of the leaves, and are succeeded by bright red berries, which also grow from the middle of the leaves, and which have a most singular appearance, as they seem as if they had dropped there by accident, so unnatural does it appear that they should grow in such a position. This plant is called butcher's broom (*Ruscus aculeàtus*), because butchers used formerly to hang bunches of it over their meat to keep away the flies; as, from the hardness of the leaves and their sharp points, which are as prickly as those of the holly, they wound the large flies, which are most injurious to meat, whenever they approach them. In Germany, the plant is called mouse-thorn, because it is used in cupboards and pantries to put over cold meat, butter, and other articles of food, which are occasionally attacked by mice, to keep these little animals away; as, when they have once pricked their noses with the sharp points of the butcher's broom, they never venture near the place again. The botanic name of the plant (*Ruscus*) is derived from two Celtic words, signifying box holly.

BUTCHER'S BROOM.

The warmth of February is seldom sufficient to hatch the eggs of the moths and butterflies, except in some instances where the eggs have been deposited in situations fully exposed to the sun. The water beetles, at the beginning of winter, generally retire to the mud at the bottom of the ponds, where they remain till the frost is all gone. The ground beetles (*Cárabus*), on the contrary, generally adhere by their claws to the underside of a stone, which serves for their winter retreat, their backs being next the ground: a strange posture, which, however, is no doubt dictated to them by instinct for some admirable purpose which we do not yet clearly understand, but which, perhaps, may be, as Messrs. Kirby and Spence seem to suppose, intended to defend them from the wet. Sometimes a number of these beetles are found crowded together as if to keep each other warm. In all cases, the ground beetles appear to winter in a perfect state, and in places whence they can easily emerge whenever a few fine days incline them to do so. Thus, they are frequently seen in February, or, in fact, whenever a few warm days have given the first indications of spring. The ground beetles are so called because they are very seldom seen except on the ground. Most of the species, indeed, are incapable of flying, as they have only the rudiments of wings; and those that have wings very rarely make use of them, as they are generally too short and too weak for the purposes of flight. The insects are, however, very active, running away with the greatest quickness when alarmed, and hiding themselves in the ground and under stones. They generally shun the light, coming abroad only in the evening, and then preying voraciously upon other insects, or, when these are not to be procured, on their own species. Whenever one of the ground beetles is injured in any way, or appears feeble or ill, the others are sure to attack him and devour him. When taken in the hand, they eject a drop of very acrid liquor, which has a very strong disagreeable smell, and which burns the hand like caustic, leaving a black or brownish stain which it is very difficult to efface. The grubs of these insects are found generally in rotten wood, and they differ from many other kinds of grubs in having six scaly feet, and remarkably strong jaws, with which they seize any caterpillars that are so unfortunate as to fall in their way. Réaumur, a French naturalist, has given us an account of the voracity of one of these grubs that is perfectly terrific. He says, that with its scaly pincers it will attack a caterpillar, and burying its head in the body, "notwithstanding the writhing of the sufferer, will persevere till the whole is devoured. The largest caterpillar is hardly sufficient for one day's nourishment; and it will eat several in the same day, when they are to be found." These grubs are so gluttonous that when they have an opportunity, they eat so much that the skin appears ready to crack. This inordinate appetite, however, does not always go unpunished; for sometimes when the largest of the grubs are unable to move from repletion, they are attacked by the young and active of their own species, and devoured. After giving such an instance of their barbarity, it is but fair to add, that they are highly respected in France for the good they do in destroying the grub of the cockchafer, a most destructive insect; which, in France particularly, is considered to destroy more plants than nearly all the other insects put together.



GROUND BEETLE.

NOTES ON NATURAL HISTORY.—MARCH.

THE weather in March is generally more capricious than at any other season of the year; as in this month spring and winter appear contending for the victory, and cold winds, accompanied perhaps by frost and snow, are followed by gleams of sunshine, and sometimes by days as hot as those in the middle of summer. Violent storms are also frequent at this season, particularly about the vernal equinox, and for a week or two before and after that season. The storms in England, however, are but trivial compared with those of America; and one which occurred in that country just at the breaking up of winter is so remarkable, that an account of it was published some years ago by Mr. Richard Taylor, of which the following is an abridgement. This *ice-storm* occurred in the year 1832, at Philipsburg, in Pennsylvania. The winter had been remarkably severe, but at the earliest commencement of spring a thaw took place, and in the open clearings all traces of snow suddenly disappeared; the birds began to sing, and the mosquitoes came out of their hiding-places and danced in clusters in the sunshine. At night a heavy rain set in, which descended in torrents, and was accompanied by such a piercing wind that it froze as soon as it touched the trees and the ground, so as to envelope every object in a thick coating of transparent ice. In the morning the scene surpassed all description: the ground looked like an enormous lake frozen quite hard; and the trees all seemed as though they had been formed of glass. The heavy foliage of the hemlock and spruce firs was literally incased in solid masses of ice, and the smallest twig or blade of grass, being surrounded by ice more than an inch thick, resembled the vegetable substances which sometimes occur in masses of crystal. While all was still, the scene was one of glittering magnificence; but when a wind arose it became terrific. The tall trees drooped and swung heavily, weighed down by the masses of solid crystal which the branches had to support, and as these struck against each other, they shivered and sent down avalanches of ice. On the succeeding morning, the limbs of the trees began to give way under such an unusual load. Every where around was seen and heard the crashing of the topmost branches, which fell to the earth with a noise like the breaking of glass, yet so loud as to make the woods resound. As the day advanced, instead of branches, whole trees began to fall; and, during twenty-four hours, the scene which took place was as sublime as can well be conceived. There was no wind perceptible, yet, notwithstanding the calmness of the day, the whole forest seemed in motion—falling, wasting, or crumbling, as it were, piecemeal. Crash succeeded to crash, until at length these became so rapidly continuous as to resemble the incessant discharges of artillery; gradually increasing, as if at first from the irregular firing at intervals of the outposts, to the uninterrupted roar of a heavy cannonade. Pines of one hundred and fifty and one hundred and eighty feet in height came thundering to the ground, carrying others before them. Groves of hemlocks were bent to the ground like reeds; and the spreading oaks and towering sugar maples were uprooted like stubble, and often without giving a moment's warning. Under every tree was a rapidly accumulating *débris* of displaced limbs and branches; their weight increased more than tenfold by the ice, and crushing every thing in their fall with sudden and terrific violence. Altogether, this spectacle was one of indescribable grandeur. The roar, the cracking and rending, the thundering fall of the uprooted trees, the startling unusual sounds and sights produced by the descent of such masses of solid ice, and the suddenness of the crash when a neighbouring tree gave way, all together presented a scene not easily forgotten. Yet all this was going on in a dead calm, except at intervals a gentle breeze from the south-east slightly waved the topmost pines. Had the wind freshened, the destruction would have been still more appalling. It was awful to witness the sudden prostration of oaks of the largest class. These trees were the greatest sufferers; and it seemed remarkable that the deciduous trees should be less able to bear the additional burthen than the heavily laden evergreens. The branches of the oaks rapidly gave way, while the thickly encased foliage of the hemlock spruce fir hung drooping around the stems, upon their long pliant branches, until they appeared like a solid mass, or monumental pillar of ice. The weight of the trees was so prodigiously increased by the load of ice they had to sustain, that a branch of hemlock spruce which weighed twenty pounds when covered with ice, weighed only one pound when the ice was melted. The scene of desolation which presented itself after this "ice-storm," Mr. Taylor describes as being most extraordinary. Within the limits of fifteen acres of forest fifty of the largest trees were overthrown, besides an immense number that had their branches broken. Roads were completely stopped up by the falling timber. Waggons, slades, and sleighs were necessarily abandoned, and the horses, in some instances, with difficulty saved. In the course of a few days, however, a thaw, accompanied by heavy rain, completely cleared the drooping forest of the remains of its unwonted covering.

As many birds build their nests in February, of course young birds are abundant in the month of March; and as, when the weather happens not to be particularly warm, there are not so many caterpillars as in summer, the parent birds are frequently obliged to go to a considerable distance to obtain food for their young; and, as the young birds are thus left comparatively unprotected, they frequently fall victims to some of the many enemies by which they are surrounded. The parent birds, also, from the intentness with which they pursue their occupation, frequently run into dangers which, under other circumstances, they would have avoided, and are pounced upon by the sparrow-hawks and other birds of prey, which seem instinctively to know that it is a favourable moment for their attacks. In some cases the unfortunate birds appear to see their danger, but to be unable to avoid it; and in the "Journal of a Naturalist" a fact is related which seems to prove that the powers of some of the smaller birds are completely subdued by the presence of an enemy:—"A beautiful male bullfinch," says Mr. Knapp, "that sat pecking the buds of a blackthorn by my side, when I was overlooking the work of a labourer, suddenly uttered the instinctive moan of danger, but made no attempt to escape into the bush, seemingly deprived of the power of exertion. On looking round, a sparrow-hawk was observed on motionless wing, gliding rapidly along the hedge, and, passing me, rushed on its prey with undeviating certainty."

WINTER GREEN.

The Winter Green (*Pyròla*) is an elegant little plant, which grows wild in the north of England and in Scotland, but which it is very difficult to cultivate. One species is occasionally found in gardens, but that which has cut leaves is quite a wild denizen of the woods, which resists every attempt at cultivation. The flower is very pretty, as it is white with a yellow centre, and the petals have a solid wax-like appearance, somewhat like those of the camellia.

In March, the meadows in some situations are gay with daffodils, the wild flowers of which are, perhaps, even more splendid than the cultivated varieties, though they are much less durable. Shakespeare speaks of the daffodil in the beautiful lines on the flowers of spring, in "The Winter's Tale:"—

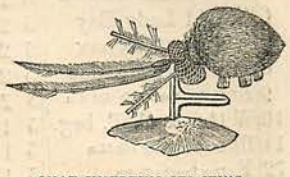
> Daffodils,
> That come before the swallow dares, and take
> The winds of March with beauty; Violets dim,
> But sweeter than the lids of Juno's eyes,
> Or Cytherea's breath; pale Primroses,
> That die unmarried, ere they can behold
> Bright Phœbus in his strength; bold Oxlips, and
> The Crown Imperial.

Herrick has also addressed the following lines to the daffodil:—

> Fair daffodils, we weep to see
> You haste away so soon;
> As yet the early rising sun
> Has not attained his noon.
> Stay, stay,
> Until the hastening day
> Has run
> But to the evening song;
> And, having pray'd together, we
> Will go with you along!
>
> We have short time to stay, as you;
> We have as short a spring;
> As quick a growth to meet decay,
> As you, or anything:
> We die
> As your hours do; and dry
> Away,
> Like to the summer's rain,
> Or as the pearls of morning dew,
> Ne'er to be found again.

In the gardens are now abundance of crocuses of various kinds; mezereons, pink and white; the spurge laurel, one kind of which (*Dáphne póntica*) has fragrant flowers; and abundance of violets. The trees are beginning to come into leaf, particularly the willow, the laburnum, and the lilac; and the horse-chestnut begins to open its buds, the large scales enclosing which crack and fall off in such quantities that they may be gathered up with the hand from under the trees. The buds of the elm also throw off their scales when the leaves first open in spring. Among the other trees which come early into leaf may be mentioned the aspen and the white poplar.

The alternations of bright sunshine and rain which are common in March are extremely favourable to the appearance of gnats and other similar insects. The first of these that appear are what are called the winter midges (*Trichocèra hyemàlis*). "These delicate little creatures may often be seen throughout the winter and early spring months assembled in troops, alternately rising and falling with rapid revolutions, in some sunny nook, even though the ground may at the time be covered with snow." As the spring advances, these midges are succeeded by others of a different species; and as the weather becomes warmer the true gnats appear. The sting of the gnat (*Culex pipiens*) is well known; though gnats themselves are generally so rapid in their movements, and so much dreaded whenever they appear, that very few people are aware of the delicacy and elegance of their forms. Even the sting is very curiously formed. The sucker which pierces the skin is enclosed in a sheath, which folds up as the sucker enters into the flesh: the sucker of the gnat has six lancets, and it thus inflicts a severe though minute wound, the pain of which is increased by an acrid liquor injected into it. When a gnat is examined under a microscope, it will be found beautifully and delicately formed; and those who will take the trouble to watch the operations of the female, when she is about to make her nest, will be very much struck with the ingenuity and admirable instinct which this little creature displays. The eggs of the gnat are pointed at the upper end and much broader below, and they are so heavy that if laid singly in the water they would sink to the bottom. The difficulty, therefore, is to contrive some mode of keeping them floating; and this the gnat performs by making her eggs into a kind of boat-shaped raft. To perform this the mother gnat fixes herself by her fore-legs to a floating leaf, branch, or anything else that may be in the water, with her body resting on the surface, except the last ring of her tail, which is a little raised; "she then crosses her two hind legs in the form of the letter X, the inner opening of which is intended to form the scaffolding of her structure. She accordingly brings the inner angle of her crossed legs close to the raised part of her body and places in it an egg, covered, as is usual among insects, with a glutinous fluid. On each side of this egg she places another, all which adhere firmly together, by means of their glue, and form a triangular figure, which is the stern of the raft. She proceeds in the same manner to add egg after egg in a vertical (not a horizontal) position, carefully regulating the shape by her crossed legs; and, as her raft increases in magnitude, she pushes the whole gradually to a greater distance; and when she has about half finished she uncrosses her legs and places them parallel, the angle being no longer necessary for shaping the boat. Each raft consists of from two hundred and fifty to three hundred and fifty eggs, which, when all laid, float on the water secure from sinking, and are finally abandoned by the mother. They are hatched in a few days, the grubs issuing from the lower end; but the boat, now composed of the empty shells, continues to float till it is destroyed by the weather.



GNAT INSERTING ITS STING.

FEMALE GNAT DEPOSITING HER EGGS.

NOTES ON NATURAL HISTORY.—APRIL.

All day the low-hung clouds have dropt
Their garner'd fulness down;
All day that soft grey mist hath wrapt
Hill, valley, grove, and town.
The very earth, the steamy air,
Is all with fragrance rife;
And grace and beauty everywhere
Are flushing into life.

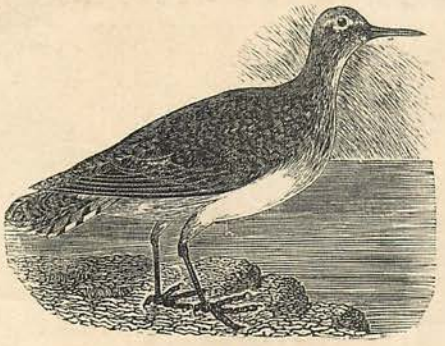
Down, down they come—those fruitful stores!
Those earth-rejoicing drops!
A momentary deluge pours,
Then thins, decreases, stops;
And ere the dimples on the stream
Have circled out of sight,
Lo! from the west, a parting gleam
Breaks forth of amber light.

THESE lines admirably describe the appearance of an April day with its alternations of rain and sunshine, which seem as though nature were struggling to shake off the dominion of winter, and to welcome summer.

Many of the migratory birds return to England in this month, and especially the cuckoo, which,

Hid in some bush, now sings her idle song,
Monotonous, yet sweet; now here, now there;
Herself but rarely seen.

Other birds also make their appearance in April, and one of these, the common sandpiper or summer snipe, only stays from April till September. "The habits of the common sandpiper," Mr. Yarrell observes, "are interesting; its actions



COMMON SANDPIPER.

are lively, and it is mostly seen while running nimbly along the gravelly margins of rivers, brooks, lakes, or ponds. When on the ground it is in constant motion, flirting the tail up and down, and almost as frequently stretching out, and again withdrawing the head and neck. When disturbed and flushed, this bird utters a piping note on taking wing, which has been compared by Colonel Sykes to the sounds, *wheet, wheet, wheet*; and Mr. Selby says, that, from the resemblance to its well-known note, one of the provincial names of this species is Willy Wicket." This bird feeds on worms and insects. It is seldom seen on the sea-shore, though it is fond of fresh water, and generally makes its nest in a hole in the bank of a stream. The female, when alarmed, tries all kinds of expedients to entice strangers from her nest, and, like the female lapwing, she affects lameness, or else runs with one wing hanging down as though it were broken, in order to divert the attention of a stranger from her brood. A correspondent of the *Magazine of Natural History*, after stating that the common sandpiper breeds in Lancashire, adds, "and I this year started an old one from her nest, at the root of a fir tree. She screamed out, and rolled about in such a manner, and seemed so completely disabled, that, although perfectly aware that her intention was to allure me from her nest, I could not resist my inclination to pursue her, and, in consequence, I had great difficulty in finding the nest again. It was built of a few dried leaves of the Weymouth pine, and contained three young ones, just hatched, and an egg, through the shell of which the bill of the young chick was just making its way; yet, young as they were, on my taking out the egg to examine it, the little things, which could not have been out of their shells more than an hour or two, set off out of the nest with as much celerity as if they had been running about a fortnight. As I thought the old one would abandon the egg if the young ones left the nest, I caught them, and covering them up with my hand for some time, they settled down again. Next day all four had disappeared." The full-grown sandpipers can swim and dive very well; and a writer on the subject says, that when a sandpiper, flying across a river, was attacked by a hawk, it instantly dived, and remained under water till the hawk had disappeared. It then emerged and rejoined its companions. It is said that when diving, this bird uses its wings under water the same as in flying; and on one occasion, when a sandpiper was shot at and wounded so that it fell near a brook, no sooner was it down than it ran as quickly as possible into the water, into which it plunged as a place of refuge. This bird is supposed to pass its winters generally in the south of Europe, but it has been found at Tangiers, in Asia Minor, and even in India.

In April the greater number of the wild flowers are in perfection, and, as Charlotte Smith sings,

The furze is yellow on the heath,
The banks with speedwell flowers are gay,
The oaks are budding, and beneath
The hawthorn soon will bear the wreath,
The silver wreath of May.

The sloe and the bullace are now in flower in the hedges, and the birds are busy pecking off the opening buds of the hawthorn and other trees. In the gardens the birds generally attack the gooseberry bushes in this month, and they have no mercy on the crocuses and other spring flowers, the petals of which frequently look jagged and torn from the laceration of their little beaks. Towards the close of the month the wild heart's-ease appears in the meadows, and it may, perhaps, be interesting to mention that this plant first excited the attention of Bartram, a celebrated American botanist, to the study of plants. He was walking in a field in early spring, and chancing to see a wild heart's-ease, he gathered it, and went on, thinking on various subjects, and carelessly plucking off the petals of the flower, without being well aware of what he was doing. He then chanced to cast his eye upon the remnant left in his hand, and was much struck with its singular appearance, as the stamens and pistil of the heart's-ease, when the petals have been stripped off, bear a considerable resemblance to a young bird when it has just issued from the shell. Bartram was so struck with this, that he gathered other flowers, and observing how curiously each was formed, he went home deeply impressed with the wonders of nature, and from that time he preferred the study of natural history to any other pursuit, and afterwards became the first botanist of America.

In gardens in warm and yet open situations, such as the garden of the London Horticultural Society at Chiswick, a number of beautiful plants are in flower. The spring gentian grows close to the ground, with its large bell-shaped flowers of the deepest and richest dark blue. The *Mahònia*, or ash berberry, forms an elegant little shrub, with bright dark green shining leaves, and a profusion of rich yellow clustered flowers. The Judas-tree (*Cèrcis Siliquàstrum*) has a profusion of bright pink pea-like flowers, which are produced on the naked trunk and branches, appearing before the leaves. The *Magnòlia conspicua*, or Yulan-tree, produces its large lily-like flowers, also before the leaves, and they appear in such profusion that the tree is sometimes completely covered with them, as if with a sheet. There was a large tree of this kind in a nursery at Kensington, near the entrance to Kensington Gardens, which, in April, 1827, was covered with upwards of eleven hundred flowers, and had a very singular effect when seen from the road on a moonlight night, as it looked like a white pyramid among the surrounding trees, so completely was it covered with blossoms. The *Wistària*, or *Glýcine sinénsis*, is generally in all its beauty, with its racemes of shaded lilac flowers, in shape like those of the laburnum, which it generally precedes by a few days, the laburnum being followed by the *Robínia Pseùd-Acàcia*, the flowers of which are of the same shape, but of a different colour, being white slightly tinged with pink. Of all these trees, the *Wistària* is perhaps the most beautiful, as its flowers are delicately shaded; they are also slightly fragrant, and they appear very early in spring, a second crop being often seen in August or September. Some varieties of the laburnum are also fragrant, and others are remarkably beautiful, from the great length of their drooping racemes of flowers. The *Robínia*, or False Acacia, is the least beautiful of the three, though it also varies occasionally, and is sometimes much more ornamental than at others. The wild cherry comes into flower towards the middle of the month, and it is extremely ornamental in woods and pleasure-grounds, from the great profusion of its flowers.

Among the numerous insects that are found in gardens in April, may be mentioned the cuckoo-spit, or froth-fly, or frog-hopper; for by all these names is this curious insect popularly known. The names of cuckoo-spit and froth-fly both allude to the peculiar habit of the insect, when in the larva state, of enveloping itself in a kind of frothy secretion, somewhat resembling saliva, and which, indeed, was formerly supposed to be the saliva of the cuckoo, it being found on the young shoots of plants just about the time that the cuckoo is heard in the woods. The frothy secretion is supposed to be intended to preserve the tender body of the insect from the overpowering effects of the sun, as it has been observed to be produced in exact proportion to the heat of the weather. It is not known exactly how the froth is produced, but it is evidently only water, to which the insect gives its frothy appearance; as, when by any chance it becomes condensed, it drops like rain from the trees on which the insect is found. It is only in its larva, or infant state, that it produces the froth. The larva and the pupa resemble the perfect insect, except that the larva has no wings, and the pupa has very small ones. The perfect insect, however, has both wings and wing-cases, and it has the power of flying to a considerable distance. Sometimes, indeed, these insects are seen in vast multitudes on the wing. Professor Welsh states (as quoted by Messrs. Kirby and Spence), "that one night, about eleven o'clock, sitting in his study, his attention was attracted by what seemed the pelting of hail against his window, which surprised him by its long continuance; he opened the window, and found the noise was occasioned by a flight of the froth frog-hopper, which entered the room in such numbers as to cover the table. From this circumstance, and the continuance of the pelting, which lasted at least half an hour, an idea may be formed of the vast host of these insects passing over. It passed from east to west; and, as his window faced the south, the insects only glanced against it obliquely." One of the peculiarities of this insect is its power of leaping, which is so great, that, being assisted by its wings, it will sometimes leap a distance of five or six feet, which, as Messrs. Kirby and Spence observe, is more than two hundred and fifty times its own length, or as much as if a man were to take a leap a quarter of a mile high. This extraordinary activity appears to be principally occasioned by the great length of the thighs of the insect, which are also furnished on their outer margin with a fringe of stiff hairs or strong pines, which are of great use to the insect in leaping. The insect, when about to leap forward, places its hind thighs nearly erect, keeping them close to the body; it next with great violence kicks them out backwards, so as to stretch the leg in a right line, and to press the spines upon the ground; the spines then lay hold of the surface, and by their pressure enable the body to spring forwards. The great assistance afforded by the spines is clearly shown by the fact that, when the insect is on glass, of which the spines cannot catch hold of the surface, it cannot leap more than six inches.

CUCKOO-SPIT.

a, The frothy substance. b, The pupa.

PERFECT INSECT OF THE CUCKOO-SPIT.

About this season, if the buds of the rose-trees are examined just as the leaves are beginning to unfold, a little brown speck will be found attached to them here and there, looking like a seed. This is a case which conceals the larva or caterpillar of a very small moth (*Tinea rhodophagélla*). The larva is very destructive, and when it has devoured one leaf, it removes with its case to another. It is very small, being only a few lines long, and yellow, with a black head, and a ring of black spots round the body near to the head. When it goes into the pupa state, it only enlarges a little the case in which it lived while it was a caterpillar. The moth is very small; its body is of a silvery grey, and its upper wings are covered with small black dots. This caterpillar is most troublesome in the flower-pit, where it appears on rose-trees in pots, which are intended for early flowering; but though it is not a native of this country, it is now frequently found on rose-trees in the open air. Insects are very abundant at this season, probably for two reasons: first, that they can feed most easily upon the leaves when they are first developed; and, secondly, because they are wanted to feed the number of young birds which are hatched in early spring.

NOTES ON NATURAL HISTORY.—MAY.

Among all the songsters of the grove at this season, one of the most delightful is the fauvette, or garden warbler. It is not very abundant in England, but in

GARDEN WARBLER, OR FAUVETTE.

Belgium it is a great favourite; and it is, probably, oftener in this country than people are aware of, as it is a very shy, timid bird, and it is very difficult to obtain a sight of it. In Belgium it is frequently kept in a cage; and its song is found very little inferior to that of the nightingale. Some of the notes have a peculiar softness and sweetness, while others are more loud and powerful, and others remarkably quick and lively. "It first visits us," says Sweet, "in the spring, about the latter end of April, or the beginning of May; and its arrival is soon made known by its very loud and long song. It generally begins very low, not unlike the song of the swallow, but raises it by degrees until it resembles the song of the blackbird, singing nearly all through the day, and the greater part of the time it stays with us, which is but short, as it leaves us again in August. In confinement it will sing nearly all through the year if it be treated well." In a wild state the fauvette is found in gardens and plantations, where it feeds chiefly on fruits, devouring only one kind of caterpillar, which, singularly enough, seems to be eaten by no other bird, viz. the caterpillar of the cabbage-butterfly. It is said to eat as many as from six to ten of these caterpillars in one day. It is particularly fond of strawberries, and will attack cherries even before they are ripe.

The long-tailed titmouse generally builds in this month. These are pretty little birds, and their nest is curiously constructed, as it generally hangs about five feet from the ground, and is of a very curious and singular form, about the size of a small melon, with a hole on one side through which the parent bird enters. The long-tailed titmice may often be seen on a fine day in May flying round and round after one another, as if they were having a game at play. They are generally found in parties of ten or more together, the birds belonging to a brood having the habit of continuing together after they have attained their full size.

There the green thorn her silver buds
  Expands to May's enlivening beam;
Hottonia blushes on the floods;
  And where the slowly-trickling stream
'Mid grass and spiry rushes glides,
Her lovely flowers the Buckbean hides.

Wound in the hedgerow's oaken boughs,
  The Woodbine's tassels float in air;
And, blushing the uncultured Rose,
  Hangs high her beauteous blossoms there;
Her fillets there the Nightshade weaves,
And the Bryonia winds her scollop'd leaves.

In the lone copse, or shadowy dale,
  Wild cluster'd knots of Harebells blow,
And droops the Lily of the Vale,
  The Periwinkle's leaves below;
The Orchis race with varied beauty see,
M . . . the gay Fly or the exploring Bee.

* * *

Singular as are the shapes assumed by some of the orchideous epiphytes, those of the terrestrial *Orchidaceæ* are scarcely less extraordinary. These plants are abundant in woods on chalky soils, particularly in the chalk pits and on the chalk hills of Kent. The flowers of the genus *Orchis* are all very curiously formed: the germen, or incipient seed-vessel, is long and twisted, so as to supply the place of a footstalk to the flower; and the largest petal, which is made to point downwards, in consequence of the distortion of the germen, is by far the most conspicuous part of the flower, and is termed the lip. It is this lip which represents so many curious forms; and sometimes it takes so closely the resemblance of an insect, as to deceive even an experienced eye. In one species, the monkey orchis, the lip is deeply cut, and the flower takes the figure of a little man or monkey dancing, with a hood over his head. In the lizard orchis, the lip is cut into three parts, the centre one of which is very long, and represents the tail of the lizard, while the two shorter ones form no bad representation of its feet. In the man orchis, the flower stem seems hung all over with effigies of little yellow men with green hats. The bee orchis, the spider orchis, and the fly orchis have all very curiously-formed flowers, bearing a striking resemblance to the insects from which they take their respective names. The fly orchis is very abundant in the chalky districts of south Kent, where it is found with the bee orchis, but is easily distinguished from all the other kinds of the genus by the blue spot in the middle of that part o. the lip which forms the back of the fly. All the species which resemble insects flower in May and June, and they are all very difficult to cultivate in gardens.

FLY ORCHIS.

In this month the great round-leaved sallow is in flower, and is very ornamental. It is one of the few species belonging to the willow genus that prefer a dry soil, as most of the other kinds will only grow in marshy places, or where their roots can have free access to water. Above two hundred species of willow are known, and they vary in size from a shrub only two or three inches high, to timber trees fifty or sixty feet high. Some of the smaller kinds are used for basket-making; and there are little islands in the Thames, called holts, set aside purposely for growing them. All the willows which are used for making baskets are called osiers, and those that have woolly leaves are called sallows, the true willows having long thin leaves. All the trees included in the genus belong to the true willows. In the neighbourhood of London, and in several other parts of Great Britain, the young people gather branches of the great sallow on Palm Sunday, which they carry in imitation of palm branches. The flowers of the willow have no petals, but they are ornamental from the rich golden colour of the anthers of their stamens.

In the insect world, the beetles are now particularly abundant. These creatures generally bury themselves in the ground during the winter, but at the first warmth of spring they creep out and seem to enjoy themselves in the beams of the sun. One of the most curious of the beetle tribe is the burying beetle *(Necrophorus vespillo)*, one of the marked peculiarities of which consists in the custom which these beetles have of interring small animals, such as mice and moles, for the purpose of depositing their eggs in the decaying carcase. At first sight it appears impossible that these beetles, which are only of a moderate size, could possibly contrive to bury creatures so much larger than themselves; but the manner in which it is done is very ingenious. The beetle first walks round the dead body, and seems to examine it carefully on every side. It then begins gradually to remove the earth from below the body, which slowly sinks into the hollow thus made, the beetle continuing to work below it till it has descended to a sufficient depth, after which the little labourer covers the body carefully with the loose soil it has thrown out during the process of excavation. The sense of smell of these beetles, like that of many other insects, is extremely delicate, and "no sooner has any of the smaller quadrupeds perished, than one or more of these gravediggers will make their appearance, and in a few hours the corpse will be interred." It may easily be supposed that the remarkable habits of these beetles were not even guessed at for some time; and, indeed, they were not known till 1752, when they were observed by M. Gleditsch, and a very interesting account is given of the mode in which he discovered this curious fact by Messrs. Kirby and Spence. M. Gleditsch had "often remarked that dead moles, when laid upon the ground, especially if upon loose earth, were almost sure to disappear in the course of two or three days, often of twelve hours. To ascertain the cause, he placed a mole upon one of the beds of his garden. It had vanished by the third morning; and on digging where it had been laid, he found it buried to the depth of three inches, and under it four beetles which seemed to have been the agents in this singular inhumation. Not perceiving anything particular in the mole, he buried it again; and on examining it at the end of six days he found it swarming with maggots, apparently the issue of the beetles, which M. Gleditsch now naturally concluded had buried the carcase for the food of their future young. To determine these points more clearly, he put four of these insects into a glass vessel half filled with earth and properly secured, and upon the surface of the earth two frogs. In less than twelve hours one of the frogs was interred by two of the beetles: the other two ran about the whole day, as if busied in measuring the dimensions of the remaining corpse, which on the third day was also found buried. He then introduced a dead linnet. A pair of the beetles were soon engaged upon the bird. They began their operations by pushing out the earth from under the body, so as to form a cavity for its reception; and it was curious to see the efforts which the beetles made by dragging at the feathers of the bird from below to pull it into its grave. The male having driven the female away, continued to work alone for five hours. He lifted up the bird, changed its place, turned it and arranged it in the grave, and from time to time came out of the hole, mounted upon it and trod it under foot, and retired below and pulled it down. At length, apparently wearied with this uninterrupted labour, it came forth and leaned its head upon the earth beside the bird without the smallest motion as if to rest itself, for a full hour, when it again crept under the earth. The next day, in the morning, the bird was an inch and a half under grouud, and the trench remained open the whole day, the corpse seeming as if laid out upon a bier, surrounded with a rampart of mould. In the evening it had sunk half an inch lower, and in another day the work was completed and the bird covered. M. Gleditsch continued to add other small dead animals, which were all sooner or later buried; and the result of his experiment was, that in fifty days four beetles had interred in the very small space of earth allotted to them, twelve carcases, viz. four frogs, three small birds, two fishes, one mole, and two grasshoppers, besides the entrails of a fish, and two morsels of the lungs of an ox. In another experiment a single beetle buried a mole forty times its own bulk and weight in two days. It is plain that all this labour is incurred for the sake of placing in security the future young of these industrious insects, along with a necessary provision of food. One mole would have sufficed a long time for the repast of the beetles themselves, and they could have more conveniently fed upon it above ground than below. But if they had left thus exposed the carcase in which their eggs were deposited, both would have been exposed to the imminent risk of being destroyed at a mouthful by the first fox or kite that chanced to espy them."

BURYING BEETLE.

The caterpillar of the hawthorn butterfly is frequently very destructive at this season, feeding upon the young leaves as soon as the buds unfold, and stripping the trees so completely as to give them the appearance of winter even in early spring. The hawthorn butterfly very much resembles the cabbage butterfly; but the veins are black, and the under side of the wings is white, while the veins of the cabbage butterfly are white, and the under side of the wings is of a pale yellow. The hawthorn butterfly's eggs are of a pale yellow, and they are laid on leaves without any covering, but generally in rows close together. The caterpillars, when first hatched, are of a dirty yellow, with a black head, and a black ring just below it, and a brownish-red stripe on each side. They are gregarious, and spin a web on the leaf, under which they live until they have destroyed every portion of the cellular tissue, so that the leaves appear quite stripped off all the trees they have attacked. These caterpillars, however, appear only occasionally, and at intervals of sometimes several years in duration; and as birds are very fond of them, great numbers are devoured. Enough, however, remain to give a most singular appearance to the hawthorn trees which they have attacked, for as they devour the whole of the fleshy part of the leaf, leaving what may be called the skeleton, which serves to support the webs they have spun, the whole of the branches appear covered with a transparent drapery of a most singular description.

NOTES ON NATURAL HISTORY.—JUNE.

THE month of June is one of the most cheerful in the year, for in it all nature seems in full enjoyment of the delights of summer before the oppressive heat of July and August is felt. In every direction crowds of young birds are trying their wings in short flights, chirping and twittering to each other, as though they were talking of the wonderful feat they were accomplishing, in venturing for the first time to fly alone. The blackcap hatches its young about this period, and it

BLACKCAP WARBLER.

seems particularly partial to gardens and orchards; where, during the whole period of incubation, it makes the air resound with its harmonious notes. It has usually a full, sweet, and yet deep and loud song, and it expresses such a great variety of modulations, as to exceed every other bird in that respect, except the nightingale. One of its notes is a particularly long, soft shake, which sinks gradually into the lowest strain, though every note is perfectly distinct; till, just as it is dying away, the cadence rises and swells into a full burst of loud and joyful melody. When the blackcap sings, its throat is wonderfully distended, and its little body apparently quivers with intense delight. The nest of this bird is generally placed in some low bush or shrub, and it is built in a very firm and compact manner. The eggs are four or five in number, of a pale reddish brown, mottled with spots of a darker hue. The blackcap is very fond of ivy berries, and generally makes its nest in an ivy bush, when one is to be met with not too high from the ground. Large flocks of young redstarts are frequently seen at this season, and they attract attention by their splendid plumage of grey, red, and black. The redstart is very fond of building in crevices in old walls, or in vases, or broken parts of statues, or any architectural ornament which may be placed in a garden. "If we visit, in the summer season," says Mr. Slaney, "any one of those old castles or monastic ruins, which give so much additional interest to many parts of our country, whilst the daws respond to each other with their appropriate melancholy call, as we walk round the ruined walls and fallen fragments, this elegant bird will often flit before us; and, standing on a broken battlement or moss-grown pillar, shake his bright plumage, as if in triumph over the works of man!" It is said that when the redstart first arrives in spring, it mounts to the top of the loftiest tree, where it will sit and sing for hours, beginning at daybreak. The song of this bird is short, and not very striking, but it will sing at night as well as in the daytime, and may be taught any tune that is whistled to it. The redstart is an active and restless bird, and, when singing, it shakes its tail with a rapid and tremulous motion.

YELLOW BIRD'S-NEST.

The flowers of June comprise all the most beautiful of the floral world. There are, however, some plants which are common and even beautiful, but yet are comparatively little known; and the most remarkable of these are the different kinds of parasites, such as the dodder, the mistletoe, the bird's-nest, and several others. Of these parasites, the mistletoe is, perhaps, the most common. It grows on various kinds of trees, particularly on the hawthorn and the apple; and, though but very rarely, on the oak. It is said that when the Druids consecrated a grove of oak-trees, they always planted an apple orchard near it, in order that there might be a chance of the mistletoe spreading from the apple-trees to the oaks. When the Druids found the mistletoe growing on the oak, they went in solemn procession to cut it, which was always done with a golden knife, and the mistletoe was received in a piece of white linen, that had never been used for any other purpose. The Saxons, also, revered the mistletoe; and the following curious legend is related in the "Edda" respecting it. Balder (the Saxon Apollo) wishing to visit earth, Friga, his mother (the Saxon Venus), was so afraid that some accident would happen to him, that she made everything that belonged to the earth, the air, or the water take an oath not to injure him. Unfortunately, however, she forgot the mistletoe, which belongs neither to the earth, nor the air, nor the water; and the evil spirit Loke, who wished to destroy Balder, killed him with a large branch of mistletoe. All nature was instantly overwhelmed with grief for the loss of the god of the sun; but at the end of three months, Thor (who was the Jupiter of the Saxons) restored Balder to life and placed the mistletoe under the sole control of Friga, that it might never injure her again. It was probably from the mistletoe being dedicated to the Saxon goddess of love, that it is hung up at Christmas, in country places, for people to kiss under. It was formerly supposed that the mistletoe could not be sown, but it is now found that a berry may be inserted in a crack in the bark of a tree, and then, if a piece of oiled paper be tied loosely over it, to preserve it from the birds, it will germinate.

Occasionally fields of clover are covered all over with a curious twining plant, which binds the stems together, and withers the leaves. The plant itself is pretty, from its pink stems, which twine together like a number of threads, and its elegant little flowers, which are also pinkish; but it is a most destructive weed, and destroys everything it takes hold of. It grows at first from the ground, but as soon as it has twisted itself round any unfortunate plant, it detaches its root from the earth, and draws all its nourishment from the plant it has taken hold of, and which it soon destroys. The yellow bird's-nest (*Monótropa Hypópithys*) only vegetates on the roots of beech and fir-trees, and seems very seldom to perfect its seeds, which may account for the comparative scarcity of the plant. It has no leaves, but their place is supplied by brownish scales. The flowers are of a dingy yellow, at first all drooping on one side, but becoming erect in maturity. When dry the flowers smell like those of the common primrose; and they appear in June and July.

In June insects are most abundant of every kind and description, as some are just bursting into the perfect state, while others are caterpillars or pupæ. It is, indeed, almost impossible to enumerate them.

> Though numberless these insect tribes of air,
> Though numberless each tribe and species fair,
> All have their organs, arts, and arms, and tools,
> And functions exercised by various rules.
> Their peaceful hours the loom and distaff know
> But war, the force and fury of the foe,
> The spear, the falchion, and the martial mail,
> And artful stratagem, where strength may fail.—HENRY BROOKE.

Of all the stratagems employed by insects, perhaps the most curious are those of the ant-lion (*Myrmèleon*). This insect in the larva state bears considerable resemblance to the wood-louse; and, as Messrs. Kirby and Spence observe, "if we looked only at its external conformation and habits, we should be apt to conclude it one of the most helpless animals in the creation. Its sole food is the juices of other insects, particularly ants; but, at the first view, it seems impossible that it should ever secure a single meal. Not only is its pace slow, but it can walk in no other direction than backwards; you may judge, therefore, what would be such a hunter's chance of seizing an active ant. Nor would a stationary posture be more favourable; for its grim aspect would infallibly impress upon all wanderers the prudence of keeping at a respectful distance." In this helpless condition instinct teaches the ant-lion to accomplish by artifice what it would otherwise have been quite unequal to. The female generally lays her eggs in a loose sandy soil, so that as soon as the larva is hatched it finds itself in the situation most suitable to it. Its first effort is to trace in the sand a circle; and this being done with wonderful exactness, it proceeds to excavate the cavity by throwing out the sand. "Placing itself in the inside of the circle which it has traced, it thrusts the hind part of its body under the sand, and with one of its fore-legs serving as a shovel, it charges its flat and square head with a load, which it immediately throws over the outside of the circle with a jerk strong enough to carry it to the distance of several inches." Walking backwards, and constantly repeating this process, it soon arrives at the part of the circle from which it set out. It then traces another furrow in the same manner, and then others, till it has excavated a conical hole rather more than two inches deep, about three inches wide at the top, and contracting to a point at the bottom. In the course of its labours, the ant-lion frequently meets with small stones, which it places on its head one at a time, and jerks off over the margin of the pit. If, however, the stone is too large, it contrives with great difficulty to get it on its back, and, keeping it in a "steady position by an alternate movement of the segments which compose that part, it carefully walks up the ascent with its burthen, and deposits it on the outside of the margin. When, as occasionally happens, the stone is round, the labour becomes more difficult and painful; and a spectator, watching the motions of the ant-lion, feels an inexpressible interest in its behalf. He sees it, with vast exertion, elevate the stone, and begin its arduous retrograde ascent: at every moment the burthen totters to one side or the other: the adroit porter lifts up the segments of its back to balance it, and has already nearly reached the top of the pit, when a stumble or a jolt mocks all its efforts, and the stone tumbles headlong to the bottom. Mortified, but not despairing, the ant-lion returns to the charge—again replaces the stone on its back—again ascends the side, and artfully avails itself, for a road, of the channel formed by the falling stone, against the sides of which it can support its load." In this manner it frequently tries without success, renewing its efforts again and again, till at last it either succeeds or abandons the hole in despair. When all is finished, the ant-lion buries itself in the sand at the bottom of its pit, only leaving exposed its two large horn-like forceps, with which it seizes its prey. No sooner does an ant or any other insect approach the edge of the cleverly-contrived slope, than the sand gives way, and the unfortunate insect, rolling to the bottom, is instantly seized, and, if not sufficiently powerful to make any resistance, it is as instantly killed, and its body, after it has been sucked dry, is tossed by a jerk of the head of the ant-lion beyond the immediate boundary of the cavity. Sometimes, however, it happens that a large and vigorous winged insect—such as a wasp, a bee, or a beetle—tumbles headforemost into the pit; and, when this is the case, a tremendous battle ensues, and "the result at last is, that either the ant-lion is dragged out of its den, and stung to death, or dropped upon the ground, and left a prey to birds, or that the winged insect is maimed, disabled, drawn into the sand, and slain. If an insect incapable of flight, or from its situation unable to use its wings, but of larger size than the *Myrmèleon* deems it prudent at once to seize upon, chances to fall into the snare, it is overwhelmed in its attempts to reascend by repeated showers of sand, which its enemy directs upon it with unerring aim." The showers of sand are thrown up by the head of the insect, and it is astonishing the quantity it conveys each time, and the force and precision with which it hurls its ammunition on the foe.

THE ANT-LION.

NOTES ON NATURAL HISTORY.—JULY.

Now comes July, and with his fervid noon
Unsinews labour. The tired mower sleeps;
The weary maid rakes feebly; the warm swain
Pitches his load reluctant; the faint steer,
Lashing his sides, draws sulkily along
The slow encumber'd wain in midday heat.

In July the heat of the weather has generally become so oppressive that all nature appears languid; the very birds are nearly all silent, and only the robin and the wren, *with some very few* exceptions, continue to sing at all after the first fortnight in July. The birds that are heard at this season generally, indeed, sound strange and unnatural. The chiff-chaff, which at other times only repeats the shrill and monotonous two notes which have gained it its name, was heard by Mr. Jenyns, in July, to utter a singular kind of whistle, which it repeated several times in succession. Nearly all the young birds are hatched at this season; but Mr. Jenyns informs us he has found the nest of the tree-pipit (or, more probably, the meadow-pipit) on the grass as late as the middle of July. The tree-pipit, or titlark, is a kind of lark, the male bird of which has a very agreeable song; though, as Mr. Yarrell observes, "it is perhaps more attractive from the manner in which it is given than the quality of the song itself. He generally sings while perched on the top of a bush, or one of the upper branches of an elm tree standing in a hedge-row, from which, if watched for a short time, he will be seen to ascend on quivering wing about as high again as the tree, then, stretching out his wings and expanding his tail, he descends slowly by a half-circle, singing the whole time, to the same branch from which he started, or to the top of the nearest other tree; and so constant is this habit with him, that, if the observer does not approach too near so as to alarm him, the bird may be seen to perform this same evolution twenty times in half an hour." The titlarks walk on the ground, like the wagtails and the larks. The meadow-pipit is smaller than the other species; and, instead of singing on a tree, it places itself on a little hillock or a large stone, and moves its tail up and down like a wagtail. This bird always builds in the grass, and lays a little dried grass over its nest to conceal it. The rock-pipit inhabits low flat shores near the sea, "where it feeds on marine insects, sometimes seeking its food close to the edge of the retiring tide;" and sometimes busily engaged in turning over and examining sea-weed, apparently in search of small crabs or other similar crustacea.

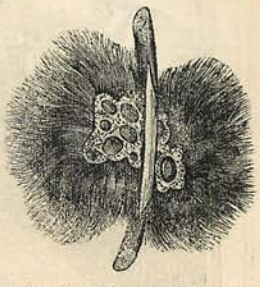
July is the month for gathering the leaves of the woad (*Isàtis tinctòria*). It is cultivated, as its leaves are applied in dyeing thread, in some parts of England; but that which is used for dyeing cloth is brought principally from the Canary Islands and Spain and Sicily. It was formerly grown in great abundance in the south of Somersetshire; and it is said that the name of Glastonbury is derived from the Celtic word *glas*, blue. The ancient Britons are reported to have painted their bodies with the blue obtained from this plant, and hence they received their name, as *Britho* is the Celtic word for to paint. The plant is a biennial, and the seeds that are sown in the July of one year produce leaves in the July of the following year in a fit state for using. When the leaves are gathered, they are steeped in water till all the fleshy matter is separated from the fibrous part; the pulp is then suffered to ferment, and the water being partly strained and partly evaporated from it, the substance, when dry, is cut into pieces about an inch square, and packed in casks or sacks for sale. It is principally used for dyeing woollen substances not only blue, but black; as all the black cloth that is made is dyed blue before it is dyed black, to prevent it from turning brown. The woad, though used in dyeing blue, has yellow flowers, which are rather ornamental. It is now comparatively very little cultivated, as it requires a very rich soil to bring the leaves to perfection; and, unless they are fleshy and succulent, they produce very little colouring matter. On this account its cultivation is so expensive, that indigo, which is produced from the leaves of the *Indigófera* (a leguminous plant growing in the East Indies), can be obtained more cheaply, and it is, therefore, generally preferred.

WOAD.

Cruciferous plants, such as the wild cabbage, the wild turnip, and the wild mustard, are generally in flower in this month; and, as their flowers are usually yellow, they give a peculiarly gay and cheerful appearance to the hedge-rows and road-sides at this season. All the cruciferous plants are edible, and though some of them are very pungent, they are far from disagreeable to the taste, and are generally considered very wholesome. They are all known by their flowers consisting of four petals, disposed in the form of a Greek cross. The umbelliferous plants, on the other hand, which are known by their flowers forming large heads, like the parsley and the meadow-sweet, are nearly always poisonous when in a wild state; though they are rendered edible, and even wholesome, by cultivation. The celery and the carrot are striking examples of this. The celery is poisonous in a wild state; and its stalks are tough and leathery. The wild carrot has a root so slender that it was at first thought it was scarcely possible to be the same plant as that cultivated in gardens. M. Vilmorin, however, of Paris, contrived, by cultivating the wild plant and raising several generations from its seeds, to obtain carrots fit for the table. In this way, no doubt, many of our popular vegetables have been introduced, of which the origin now is totally unknown. As a proof of the wonders which may be effected by cultivation, it may be mentioned that all the kinds of cabbage, greens, broccoli, and cauliflower have been raised from the same stock, and that they are only sub-varieties of the same species.

At this season of the year, rose-trees have very often curious excrescences on the branches, which look like a tufted lichen, and to which the old naturalists gave the name of *bedeguar*. These excrescences consist of numerous reddish, moss-like fibres, quite dissimilar from the leaves of the plant, and each excrescence is sometimes the size of a hen's egg. When cut open, it will be found that the centre of this hairy mass consists of from ten to a dozen cells all growing together, each containing the maggot of a kind of gnat (*Cýnips*). This gnat, or gall-insect, pierces the bark of the rose-tree with its ovipositor, and lays its eggs just within the bark, or, rather, in the soft parts of the plant; and these having their juices interrupted, bulge out into a kind of tumour; while the bark, separating into its woody fibres, forms a kind of fringe, which covers the tumour. The perfect insect is a most fearful-looking gnat. Gnats are at this season very abundant. The month of July is generally remarkably moist, and as it is also warm, it is very favourable to the increase of these creatures, who have been always observed to bite most in the warm moist weather.

LARVA AND PERFECT INSECT OF THE EGLANTINE GALL.



INTERIOR OF THE GALL ON THE EGLANTINE.

There is a species of gnat common in Hungary (*Simùlia columbaczénsis*), which, though so minute as to be scarcely perceptible without a powerful microscope, is yet so extremely destructive that it will kill a large horse or cow in a few hours. In some years these gnats fill the atmosphere so completely, that, as Kollar tells us, "it is impossible to breathe without swallowing a great number of them. Not unfrequently they appear in so dense a multitude as to be taken at a distance for a cloud, and in this form they are most to be feared. On the appearance of these clouds the herds instinctively leave their pastures, and fly to the villages to take refuge in their stables from these bloodthirsty insects. Horses, oxen, and swine generally suffer the most from them. When these flies attack any of the above-named animals, they select the tender soft parts, free from hair. Hence, they attach themselves mostly to the corners of the eyes, the mouth, the nostrils, and even creep into the ears and the inner nostrils, the throat and windpipe, &c., where they are sometimes found in animals killed by them, in thick layers. Men are no less exposed to the attacks of these scourges than domestic animals; but they can more readily drive them off, and by covering the face secure themselves from the most dangerous consequences. Solitary examples also are not wanting where little children have been killed by them, when the mother, to pursue her work, has left her babe lying in the grass, or suspended in its swing to the branch of a tree, and staid away too long. Every bite given by this insect to men or cattle causes a burning itching, and a very painful, hard, rapid swelling, which scarcely goes off in eight or ten days. Many of them, particularly when they are near together, cause a violent inflammatory fever, and in sensitive bodies cramps and convulsions. For a long time the appearance of this destructive gnat was a dark riddle to the inhabitants of the country. All sorts of conjectures were made about its origin. The inhabitants of the neighbourhood of Columbacz, in Servia, the native locality of these flies, assert that the caves in the limestone mountains, near the ancient Castle of Columbacz, are their real birth-places, as they have been seen to issue from the mouths of these caves in the form of a thick smoke. This opinion is universal in the Bannat, and is particularly maintained by the Wallachians, who add that the dragon killed by St. George is buried in one of these caves, and that these hurtful insects, as well as many other poisonous animals, are hatched in its jaws." Some of these gnats were brought to England in the summer of 1847, and exhibited at a meeting of the Entomological Society.

One of the most destructive insects at this season of the year is the raspberry beetle (*Derméstes*, or *Bytiurus, tomentòsus*). "Many of the raspberries," says Mr. Westwood, "may now be perceived more or less shrivelled, with the seed-vessels dried up. If one of these be opened, the central core of the fruit will be found more or less burrowed, as well as the fruit itself, the seeds of which are left bare and dry, especially at the top, the remainder not being full-sized, and generally prematurely ripe and discoloured. This is done by a whitish grub, of about a quarter of an inch long, and rather cylindric in figure; with the under side of the body and sides, and articulations of the segments, dirty white; the head and a dorsal plate on each ring brownish buff, with the sides and a central longitudinal line on each plate brown, thus giving the appearance of three dorsal lines of brown. The head is horny, and furnished with horny jaws and short feelers, as well as with the various membranous parts usually present, composing the under portions of the mouth of the larvæ of *Coleóptera*. The grub is also furnished with six short, scaly, articulated feet. It has also two short scaly horns on the upper side of the extremity of the body, the under side being furnished with a fleshy retractile tubercle, which the insect uses as a seventh foot. When full grown it descends to the earth, where it buries itself to a considerable depth, forming for itself a small oval cocoon of earth, with the inner surface quite smooth. Here it assumes the ordinary pupa state, to which all coleopterous insects are subject." The perfect insect is a small, buff, or slaty-brown, oval beetle, about one-sixth of an inch long, with knobbed antennæ, which is to be seen flying about the raspberry plants in summer, and which is sometimes also found on the hawthorn and the blackberry.

The bloody-nose beetle (*Chrysomèla tenebricòsa*) is so named from its having always, when alarmed, a clear drop or two of red fluid hanging from its mouth. This fluid it ejects, when taken, upon the hands of its capturers; and as, from the sharp pain it occasions, it frequently makes the holder start, the insect falls to the ground, and, of course, loses no time in making its escape. Other species of the same genus eject a white fluid, which is somewhat glutinous, and which enables them to adhere, when necessary, to the branches or leaves of trees. These beetles, indeed, and the ground beetles, to which they are very nearly allied, are remarkably expert climbers, and they will not only run up trees and along the branches of trailing plants, but they will occasionally walk with their backs downwards, adhering so firmly that it requires a tolerably strong pull to disengage them. Sometimes, the effect of a warm sunny day in February is astonishing upon the beetles which are hybernated, and they come out of their holes in such numbers, as to make one wonder where they can possibly have been hidden.

NOTES ON NATURAL HISTORY.—AUGUST.

In August very few birds are heard to sing. Even the robin and the wren are generally quiet from the middle of July till the middle of August, though the robin generally begins again to sing towards the end of the latter month. Occasionally a number of young birds, such as linnets, greenfinches, buntings, and other small birds, are seen flying together in large flocks like a swarm of bees, and seeming as though they were driven off by the old birds, though they are much too numerous to be the inhabitants of one nest; and when they fly, it is in a determined manner, "wending their way steadily in a direct line, as if under the influence of some common impulse." These flittings, also, do not appear to have anything to do with ordinary migrations, as they occur in species which do not migrate; and, in fact, it does not appear that there is any reason for their removal, unless it be that those particular kinds of birds have become, after the hatching of the young ones, too numerous for their original neighbourhood, from a deficiency of food, or some other cause; and hence they are driven forth to seek a new settlement.

Mr. Knapp says he has observed "a flock of finches and yellow-hammers basking in a hedge, and a hawk, after due consideration, apparently single out an individual. Upon its moving for its prey, some wary bird has given the alarm, and most of the little troop scuttle immediately into the hedge; but the hawk holds on its course, and darts upon a selected object. If baffled, it seldom succeeds upon another; and, so fixed are its eyes upon this one individual, that, as if unobservant of its own danger, it snatches up its morsel at our very sides. A pigeon on the roof of a dove-cot seems selected from its fellows—the hawk rarely snatching at more than one terror-stricken bird. The larger species of hawks appear to employ no powers excepting those of wing, but pursue and capture by celerity and strength."

It has often been observed that we are surrounded by wonders which we do not notice, because they are of daily occurrence, but which excite the greatest surprise when they are pointed out to us. The truth of this observation is forcibly exemplified as regards fish. We see them every day exposed for sale on stalls, and we eat them frequently at our tables, without once considering by what a curious and delicate organisation these creatures are enabled to see and breathe in an element that carries death to us and to quadrupeds. The sight of fishes appears to be remarkably strong, as it is by sight chiefly that they discover their prey. Hence, a fish is easily deceived by an artificial fly, or the imitation of a frog or other small aquatic or amphibious animal; which, if it were guided by the smell, or any other sense than the sight, could not happen. The mode in which fishes breathe is, however, the most curious. They have no lungs; but, instead of them, they have gills, carefully covered with a lid and a flap, both of which the fish can open or keep closed at pleasure. The gills are composed of arches, bordered by a kind of fringe, which, when examined through a microscope, appears covered with a velvet-like membrane, "over which myriads of wonderfully minute blood-vessels are spread, like a delicate net-work. There are commonly four of these fringed arches: they are moveable, and allow the currents of water, driven down by the action of the mouth, to flow freely through them, so as to lave every fibril." It is absolutely necessary that this should be the case, since the gills lose their power of acting as soon as they become dry; and hence a fish cannot live long after it is taken out of the water. As there is danger, however, of the food taken by the fish being carried through the gills by the stream of water constantly flowing through them, the minor curve of the arch formed by the gills is studded with spines, which prevent anything but air or water passing through them.

FLOWERING FERN.

In the vegetable world, some plants are in flower at this season that are not met with at any other, and one of the most curious of these is the flowering fern (*Osmúnda regàlis*), a plant, the very name of which seems a contradiction, as it is well known that ferns have no flowers, in the usual acceptation of the word, and that they bear their seeds on the back of their leaves. The flowering fern resembles the other plants belonging to the family in not having any proper flowers, but it has its seed-vessels on only some of its fronds, or, rather, on what should have been some of its fronds; as the seed-vessels grow clustered together, without any of the cellular tissue belonging to the leaves being produced. Thus, the seed-vessels of the flowering fern, instead of being found, as in other ferns, on the back of the leaves, look as though the leaves had withered away from them. In the early part of the summer, these seed-vessels being of a pale green, are scarcely perceptible; but about autumn they take a rich brown colour and become very ornamental. These ferns are tolerably abundant, particularly in the north of England and in Scotland, where, in marshy places, they grow to a considerable size, sometimes having been known to be upwards of eleven feet high. The botanic name of the plant is said to allude to some Saxon King named Osmund, who adopted the flowering fern as his badge, in the same way as the broom, the common heath, and many other British plants, have been adopted as banners by several Highland clans. The underground or root-like stem of this plant is tonic, and is used in rustic medicine. The moon-wort, or grape fern (*Botrýchium Lunària*), is very nearly allied to the *Osmúnda*, as it produces naked seed-vessels; but it is much less ornamental. It takes its name of moon-wort from its leaflets being somewhat crescent-shaped. The adder's tongue (*Ophioglóssum*) is another fern which does not produce its seed-vessels on the back of the leaves, but in a close clustered spike, bearing considerable resemblance to a tongue. The adder's tongue is found in moist meadows and pastures in warm situations.

The sundew, or red rot, is the name of a singular genus of perennial British plants, which are found on heaths and commons where the soil is boggy. The leaves, which all spring from the roots, are covered with glandular hairs, from the extremities of which exudes a transparent but glutinous liquid, resembling drops of dew. The flowers are nearly white, and rather pretty. There are three species: the commonest kind has round leaves, but the long-leaved species (*Drósera longifólia*) is the most ornamental. Ants and small flies are sometimes found adhering to the leaves, or entangled in the hairs, which, it is said, fold over them, and prevent the possibility of their escape; but it appears more probable that the insects are held fast by the glutinous liquid exuded from the hairs. "All the species of *Drósera* are acrid, and their juice is employed to destroy warts and corns." They are said to occasion the rot in sheep, but that probably arises from the unwholesome nature of the boggy land on which the plants grow.

LONG-LEAVED SUN-DEW.

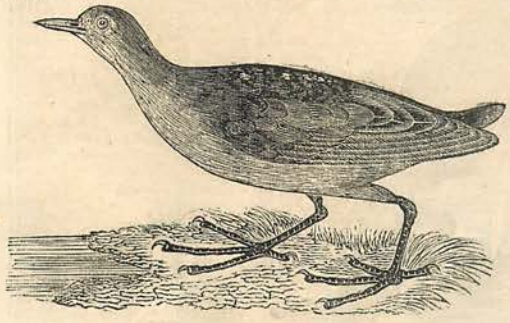
The ants generally seen are little black creatures with long legs, large heads, and very slender bodies. But these are only the working part of the community; and many people are probably not aware that, in the month of August, and sometimes later, "the habitations of the various species of ants may be seen to swarm with winged insects, which are the males and females, preparing to quit for ever the scene of their nativity and education. Every thing is in motion; and the silver wings, contrasted with the jet bodies which compose the animated mass, add a degree of splendour to the interesting scene. The bustle increases, till at length the males rise, as it were by a general impulse, into the air, and the females accompany them. The whole swarm alternately rises and falls with a slow movement to the height of about ten feet, the males flying obliquely, with a rapid zig-zag motion, and the females, though they follow the general movement of the column, appearing suspended in the air, like balloons, seemingly with no individual motion, and having their heads turned towards the wind." "Sometimes the swarms of a whole district," continue Messrs. Kirby and Spence, "unite their infinite myriads, and, rising with incredible velocity, in distinct columns, they soar above the clouds. Each column looks like a kind of slender net-work, and has a tremulous undulating motion, which has been observed to be produced by the regular alternate rising and falling just alluded to. The noise emitted by myriads and myriads of these creatures does not exceed the hum of a single wasp. The slightest zephyr disperses them; and if, in their progress, they chance to be over your head, if you walk slowly on, they will accompany you, and regulate their motions by yours." All the male, and a great number of the female, ants become the prey of birds or fish, or are destroyed in various ways; but a few females remain, some of which become the founders of new colonies, while others return to their original nest, when it is said that they are seized forcibly by some of the working ants, who tear off their wings, and keep them prisoners till they are ready to lay their eggs. During the time that the female ants are in this state of durance, the working ants, though hanging pertinaciously to each leg, to prevent their going out, at the same time attend upon them with the greatest care, feeding them regularly, and conducting them where the temperature is suitable for them, but never quitting them for a single moment. As soon as the female begins to lay her eggs, the working ants which are in attendance on her carry them off, and deposit them in proper places for them to be hatched. Each female lays four or five thousand eggs in the course of a year, so that when a single female founds a colony, she is very soon enabled to people it. When a female has founded a colony, the working ants begin to pay a homage to her very similar to that which bees render to their queen; and, as Messrs. Kirby and Spence observe, "all press round her, offer her food, conduct her by her mandibles through the difficult or steep passages of the formicary; nay, they sometimes even carry her about their city: she is then suspended upon their jaws, the ends of which are crossed; and, being coiled up like the tongue of a butterfly, she is packed so close as to incommode the carrier but little. When he sets her down, others surround and caress her, one after another tapping her on the head with their antennæ." "In whatever apartment," says Gould, "a queen condescends to be present, she commands obedience and respect. An universal gladness spreads itself through the whole cell, which is expressed by particular acts of joy and exultation. They have a particular way of skipping, leaping, and standing upon their hind legs, and prancing with the others." The ants appear to make use of these frolics to show their joy at the presence of their queen. It is said, that when a queen begins to form a colony, the first thing she does is to strip herself of her wings; so that when the female ants belonging to a colony already formed are stripped of their wings by the workers, it is not an act of cruelty on their part, but rather a delicate attention, as they spare the queen the trouble of taking off her wings herself.

COMMON ANT.

WINGED ANT.

NOTES ON NATURAL HISTORY.—SEPTEMBER.

SEPTEMBER is the favourite month of sportsmen; and in the first week or two, in addition to the ordinary number of partridges, many corn-crakes are killed, as they are generally very abundant in the fields, particularly where seed clover has been sown with barley. Corn-crakes, Mr. Yarrell observes, are excellent game for young sportsmen, as they fly very slowly with their legs hanging down, and seldom go farther than to the nearest hedge; while they are so highly prized as food, that it was formerly said two landrails are a present for a Queen. The corn-crake or landrail will put on the appearance of death when exposed to danger from which it cannot escape; and Mr. Jesse relates the following incident in proof of this assertion:—"A gentleman had a corn-crake brought to him by his dog, to all appearance quite dead. As it lay on the ground, he turned it over with his foot, and felt convinced that it was dead. Standing by, however, in silence, he suddenly saw it open an eye. He then took it up; its head fell; its legs hung loose, and it appeared again quite dead. He then put it in his pocket, and before long he felt it all alive, and struggling to escape. He then took it out; it was as lifeless as before. Having laid it again upon the ground, and retired to some distance, the bird in about five minutes warily raised its head, looked round, and decamped at full speed." There are two other kinds of corn-crake besides the common species: the one is called the spotted corn-crake, and is very prettily marked with white spots on the wings; and the other, which is called the little crake, is of an olive-brown colour, and much smaller than the other kinds.



LITTLE CRAKE.

There are but few plants in flower at this season; and though the woods are gay, from the autumnal tints taken by the leaves of some of the trees, many leaves have fallen, and the mornings and evenings have become cold and damp. Among the few flowers left may be seen the colchicum, which resembles the crocus in its form, but which is of a much paler lilac, and which has long, slender, succulent, white stems, without any appearance of leaves (which, indeed, do not show themselves above ground till the following spring, when they appear, together with their fertilised seed-vessels—which, by a wise provision of nature, have remained buried in the earth during the winter). This plant is employed by medical men, and has an extraordinary effect in lulling the pain of gout and rheumatism; but it is a very dangerous medicine, and an over-dose has frequently proved fatal.

COMMON NAVEL-WORT.

In moist, warm places, a curious plant is found in flower at this season, called the Common Navel-wort (*Cotylèdon Umbilicus*). It generally grows on walls or cottage roofs, or moist rocks; and its principal ornament consists in its singularly-shaped leaves, which are drawn down in the centre, so as to form a kind of cup, or wine-glass, the stalk of which is formed by the foot-stalk which proceeds from the centre of the under side of the leaf. The whole plant is very succulent, including the flowers, which are greenish in the common kind. In the Greater Navel-wort, on the contrary, the flowers are the most ornamental part, as they are of a bright yellow, and they form a large erect spike; while the leaves are not remarkable for their beauty. In some parts of the country this plant is called Penny-wort, from the shape of the leaves, which are sometimes round and flat, like a penny.

In September flies begin to be very troublesome; and, though they do not sting like gnats or mosquitos, they are, perhaps, still more disagreeable from the incessant buzzing they keep up around us, and the irritation they occasion by settling on the hands and face. The immense numbers of these troublesome insects surpass all belief, and it is said that in some places they have been known to be fifty to the square inch. "It is a remarkable, though as yet unexplained fact," observes Mr. Spence, in the sixth edition of the *Introduction to Entomology*, "that if nets of thread or string, with meshes a full inch square, be stretched over the open windows of a room in summer or autumn, when flies are the greatest nuisance, not a single one will venture to enter from without; so that by this simple plan a house may be kept free from these pests, while the adjoining ones, which have not had nets applied to their windows, will swarm with them. In order, however, that the protection should be efficient, it is necessary that the rooms to which it is applied should have the light enter by *one side* only; for, in those which have a thorough light, the flies pass through the meshes without scruple." "It is a singular fact," Mr. Spence observes, in another place, "that Herodotus, above two thousand years ago, stated that the Egyptian fishermen protected themselves from the attacks of mosquitos by spreading their fishing-nets over their beds: a fact which has greatly puzzled all his commentators, who, not conceiving the possibility of mosquitos being kept off by fishing-nets, which must necessarily have wide meshes, have supposed the father of history to have alluded to some protection of fine linen, similar to the gauze nets now used against these insects. But in this, as in so many other instances, the supposed error is not that of Herodotus, but of his commentators, who, ignorant of the fact above related as to flies being excluded by wide-meshed nets, could not conceive it to be the case with mosquitos." As house-flies generally lay their eggs in stable manure, Mr. Spence suggests that the number of flies might be greatly lessened in large towns if the stable dung were kept in pits closed by trap-doors. However, if this were the case, it would not be completely efficacious, as it is known that flies will lay their eggs in almost any kind of filth; and their maggots have been found in sinks and other similar places. It was formerly supposed, from the experiments of Sir Everard Home, that flies were enabled to walk against glass, and with the back downwards in various situations, by the formation of a vacuum under the soles of their feet, if they may be so termed, as it was observed that the margins of the feet were closely applied to the glass, while the central part was drawn up. It has, however, now been discovered that this hypothesis was not correct, as Mr. Blackwall (a gentleman residing in Manchester, and an acute observer of nature) noticed that flies remained attached to the sides of an exhausted glass receiver of an air-pump, even after they had entirely lost the power of locomotion, and an evident distension of the body had been occasioned by the exhaustion of the air. To detach them from these stations, Mr. Westwood adds, the employment of a small degree of force was found requisite. "In prosecuting this subject, clean phials of transparent glass, containing spiders and various insects in the larva and imago (perfect) states, capable of walking on their upright sides, were breathed into, till the aqueous vapour expelled from the lungs was copiously condensed on their inner surface. The result was remarkable; the moisture totally prevented those animals from obtaining any effectual hold on the glass, and the event was equally decisive if a small quantity of oil was substituted for the aqueous vapour." In fact, it was found that powder, or any substance on the inside of the phials, prevented the flies from climbing, and the idea naturally suggested itself that some glutinous substance was emitted by the feet of the flies which enabled them to adhere to the glass. The next point to be determined, therefore, was, whether spiders and insects in the larva and perfect states were found to leave any visible track behind them when they crawled over glass; and, by the aid of powerful magnifying-glasses, it was found that traces were left of an exceedingly minute quantity of glutinous matter, which appeared to have been emitted by the feet of these creatures; and subsequent experiments proved that the hair-like appendages which form the brushes of spiders and flies are all tubular. It has often been observed that flies that have been half drowned, if taken out of the milk or water into which they have fallen, take a great deal of time in cleaning their feet before they can walk; and this, no doubt, is to clear out the brushes of their feet, and to bring them into a proper state for emitting the glutinous fluid.

DRONE-FLY.

The drone-fly (*Eristàlis tènax*) bears so much resemblance to a bee that it is difficult at first sight to distinguish it from one; but on examining it carefully, it will be found that it has only two wings, whereas all kinds of bees have four. "The eggs of this fly," a writer in the *Gardeners' Chronicle* tells us, "are dropped in stagnant water while the female is on the wing." The larvæ are of a most extraordinary shape, being thick at one end, and having a long tail like the stalk of a plant at the other. "The underside exhibits an infinity of vessels, with a large mass or two under the thorax, like a bundle of salmon-coloured eggs. This insect has also numerous feet, surrounded by little hooks, distinctly projecting from the body, which assist it in walking. When the larva is full-fed, it crawls out of the water, and secretes itself amongst stones, in palings, or crevices of woodwork, &c.: having fixed itself, it gradually contracts as the skin dries and hardens, until it assumes an oval shape; it is then of a dirty ochreous brown colour, the anterior extremity is a little depressed, having two horns above, covered with glands on the upper surface for breathing, and beneath them are two similar, but very minute, horns; on the underside are seven pairs of spots formed of black horny points, and a slight indentation shows the position of the mouth; the tail, although useless in this stage, does not fall off." About the first week in September, "by dilating itself, the depressed portion of the pupa, to which the four horns are attached, is forced off, and the fly comes forth of a pale colour, with its wings shrivelled;" but, in a short time, the wings increase to their proper size, and the atmosphere hardens and colours the skin.

The ground beetles are occasionally covered with very small parasitical insects, which appear to annoy them exceedingly, as they run about shaking themselves as though they were using every possible effort to get rid of their tormentors; and on one occasion a ground beetle was observed to run through the loose particles of a heap of lime rubbish, squeezing itself through with considerable difficulty, but emerging on the opposite side quite clear of its parasitical insects, which had been all brushed off by the loose particles of rubbish through which the beetle had forced itself.

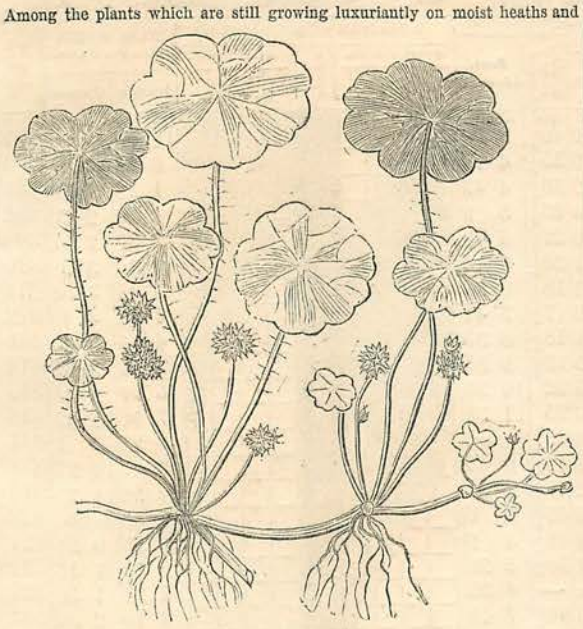
NOTES ON NATURAL HISTORY.—OCTOBER.

In this month many of the summer birds take leave of this country, and the winter birds arrive. Among the latter may be mentioned the wild swan, the wild goose, and the wild duck. All these aquatic birds make a harsh screaming as they pass over the land, which is the more annoying as they all fly at night as well as by day. The stork is the only one of these birds of passage which is not clamorous. "Before the storks take their departure from their northern summer residence," says Mr. Forster, "they assemble in large flocks, and seem to confer on the plan of their projected route. Though they are very silent at other times, on this occasion they make a singular clattering noise with their bills, and all seems bustle and consultation. It is said that the first north wind is the signal for their departure, when the whole body become silent, and move at once, generally in the night, and, taking an extensive spiral course, they are soon lost in the air." Cranes, on the contrary, are very noisy; but they are very rare in this country. Wild geese are, however, common; and the flocks are always in the shape of a wedge when they fly, so that the birds may cut the air with less individual exertion. Sometimes, however, they change their line to the resemblance of an A and an L, and sometimes they form a straight line; but the reason for these changes is not known. The Canada or cravat goose is only occasionally seen in this country: it is a remarkably beautiful goose, with a glossy black neck and white cheeks, which render it, as Mr. Waterton observes, "so particularly conspicuous, that those who have seen it once can never be at a loss to recognise it when viewed among all the other species of the goose tribe. There can be nothing," continues Mr. Waterton, "more enlivening to rural solitude than the trumpet-sounding notes of the Canada goose. They can be heard here [at Walton Hall] at most hours during the day, and often during the night." Mr. Waterton afterwards bought two barnacle geese at Rotterdam; and on their arrival at Walton Hall, they were turned on the lake in company with the Canadian geese. The following autumn one of these little barnacle ganders paired with a large old Canadian goose, and a nest having been made on the island the ill-assorted pair took possession of it, and the goose, having laid her eggs, began to sit. "Nothing," says Mr. Waterton, "could exceed the assiduity with which the little barnacle stood guard, often on one leg, over his bulky partner, day after day, as she was performing her tedious task. If anybody approached the place, his cackling was incessant; he would run at him with the fury of a turkey-cock; he would jump up at his knees, and not desist in his aggressions until the intruder had retired." At last two young geese were produced; and the vociferous gesticulations and struttings of the little gander were beyond all endurance when he first got sight of his long-looked for progeny. The hybrids were elegantly shaped, and neither so large as the mother nor so small as the father, and they partook of the colours of both parents.

The trees are now almost all stripped of their leaves, but those which remain become of the most brilliant and vivid colours. All nature, however, assumes a gloomy appearance, which is only enlivened by the recollection that the return of spring will restore the beauty of the groves. The season, however, forcibly recalls the following beautiful lines from the beginning of Pope's translation of Homer:—

> Like leaves on trees the race of man is found—
> Now green in youth, now withering on the ground;
> Another race the following spring supplies,
> They fall successive and successive rise:
> So generations in their course decay,
> So flourish these when those are pass'd away.

Among the plants which are still growing luxuriantly on moist heaths and



MARSH-PENNYWORT.

in marshy places, may be mentioned the little plant called marsh-pennywort or white-rot (*Hydrocótyle vulgàris*); the latter name alluding to its supposed evil properties in giving the rot to sheep; and the former to the situations in which it is found, and the shape of its leaves. The flowers are inconspicuous, but the plant itself is rather pretty; and it has the advantage of looking green and fresh when nearly all the vegetation around it has been brown and withered.

At this season immense quantities of herrings are found on the southern coast of England. The shoals of this fish (which is said to derive its name from the German word *heer*, an army, in allusion to its countless multitudes) are first seen off the Shetland Islands in April and May; but in the succeeding months they seem gradually to advance southward; till at last, about the beginning of September, there appears on the south coast an immense mass of fish, divided into distinct columns of five or six miles in length, by three or four in breadth. These dense masses drive the water before them with a kind of rippling motion; and, as a writer on the subject has expressed it, "sometimes they sink for the space of ten or fifteen minutes, then rise again to the surface, and in bright weather reflect a variety of splendid colours, like a field of the most precious gems." Great shoals of pilchards appear in the same manner on the coast of Cornwall.

The water-scorpion (*Nèpa*) is an extremely ferocious insect, which is said to be so savage as to destroy insects merely for the pleasure of killing them; as one that was put into a basin of water with some young tadpoles, is said to have killed them all without attempting to eat one. The common water-scorpion (*Nèpa cinèrea*) is found in ditches, ponds, and other pieces of stagnant water. These insects swim but slowly, and spend most of their time at the bottom of the water, seeking in the mud those insects which serve them as food, and which they seize very forcibly with their crab-like feet. At night they leave the ponds, and fly about with the greatest rapidity. The larva only differs from the perfect insect in its want of wings. It proceeds from an egg of a very singular form: it is oval, and from one end proceed several delicate filaments, which give it the appearance of the seeds of some of the plants belonging to the *Compósitæ*. The water-scorpion sometimes leaves the water, and is seen crawling on the grass.

WATER-SCORPION.

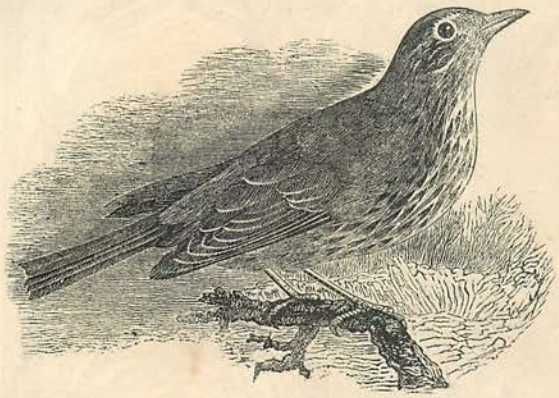
The water-boatman, or boat-fly (*Notonècta*), is a very singular aquatic insect, which always swims on its back, striking out its legs like oars, to propel itself along. It is very ferocious, and not only destroys all the smaller insects which fall in its way, but it will attack insects larger than itself. Mr. Spence also mentions that one which he caught wounded his finger with its rostrum, and gave a sharp, severe pain, as though it had been burned. These insects are only found in standing waters or sluggish rivers, and they swim on the surface of the water, unless they are disturbed; but, on the approach of danger, they immediately disappear, though they cannot remain any great length of time without coming to the top to breathe. They frequently creep on the water-plants and the mud, in search of the insects on which they feed; and when the weather is fine and warm, they often land and fly about, sometimes to a considerable distance. The female lays her eggs, which are white and long in shape, on the leaves of aquatic plants; and, as soon as the young are hatched, they begin to swim on their backs like their mother. The larva only differs from the perfect insect in the want of wings.

BOAT-FLY.

To those who visit the sea-coast, the sea-weeds which are washed on shore by the tide afford a great source of enjoyment, from the beauty and variety of their forms and colours. The *Algæ* or sea-weeds are, in fact, the vegetation of the bottom of the sea; and most of them grow under water, being torn from their roots by the force of the rushing waters, and washed on the beach by the rolling waves. Some species, it is true, appear to be always loosely floating in the water; but by far the greater number "grow attached to rocks, stones, or other substances," being fixed by the extension of the base of the stem into a broad concave plate, which either grasps the stone to which it adheres itself, or sends out numerous fibrils, which twine themselves round the rocks so firmly that they cannot be separated without laceration of their substance. The *Algæ* are all edible; and, indeed, extremely nutritious, as they consist principally of albumen and mucilage: the latter quality renders them very useful in coughs and other affections of the chest, and as a substitute for isinglass in making jelly. Besides these qualities, some of the sea-weeds contain iodine, and most of them, when burnt, yield kelp, which is used in the manufacture of glass, &c. One of the most curious of all the kinds of sea-weed is what is sometimes called the Gulf weed; but it is also known by the name of *Sargàssum*, or Sea Grape. This *Alga* is a native of the Tropics, and is found principally in the Gulf of Mexico, but it is sometimes washed on shore on the Orkney Islands, and it has been known occasionally to reach the coast of Scotland. It is, however, most abundant in the Atlantic, one part of which is called by mariners the Weedy Sea, from the immense quantity of this weed which floats on the surface of the water, and which sometimes actually impedes "the course of vessels for days together; the ocean for hundreds of miles presenting the appearance of a vast swamp or inundated meadow, and justifying the fears of the sailors in the first voyage of Columbus, who observing their slow progress and the increasing quantity of the weed, became alarmed lest, forcing their passage against the will of Heaven in search of an unknown country, their return might be rendered impossible. The accumulation of this weed in the Northern Atlantic extends nearly across its whole breadth, beginning on the east at the 30th meridian, and reaching the Bahama Islands on the west; the greatest quantities being aggregated at its eastern and western extremities, forming, as it were, two great banks, of which the former is more extensive, being upwards of twelve hundred miles from north to south." The bladder chain, or *Cystoseìra*, is of a dark olive green or brown hue, becoming almost black when dry. It is of a firm leathery substance, and is common on the coasts of Devonshire and Cornwall, and in the south of Ireland. It is interesting from the manner in which it is fixed to the stones, as, instead of having a root, it is attached by a flat hard disk, which, when clinging to the stone, looks just like one of the leather suckers with which boys amuse themselves by carrying stones. The *Halidrys*, or sea tree, is a very common sea-weed, which is fixed to rocks and stones by a larger sucker, frequently from one to four feet long. The bladder *Fucus* is another very common sea-weed, and, in fact, it forms the great mass of the weeds thrown by the sea upon the land, which are collected for the purposes of manure. It is sometimes called the sea-wrack, and in other places kelp-ware, as it is burnt for the sake of making kelp. This weed has a number of little bladders in its fronds, which children amuse themselves with breaking by clapping the fronds between their hands. The seed-vessels are shaped like a pine-apple, and they are produced at the extremity of the fronds. There are several other kinds of *Fucus*, all of which are very common on the British coast. The sea-weed called *Alària*, or badder-locks, is very good to eat; and what is called the tangle (*Laminària digitàta*) is boiled for the purpose of feeding cattle. Dr. Neill states, "that the stems in Scotland are sometimes made into knife-handles: for this purpose a pretty thick stem is selected and cut into pieces about four inches long; into these, while fresh, are stuck blades of knives, such as gardeners use for pruning and grafting. As the stem dries it contracts and hardens, closely and firmly embracing the hilt of the blade. In the course of some months the handles become quite firm, and very hard and shrivelled, so that when tipped with metal they are hardly to be distinguished from harts-horn." There are many other kinds of sea-weed, particularly the beautiful pink *Delessèria*; the *Ptilòta plumòsa*, which is sometimes of a pale crimson, and sometimes green; and several other extremely beautiful plants of the most brilliant colours and delicate texture.

NOTES ON NATURAL HISTORY.—NOVEMBER.

THE 1st of November is All Saints' Day; and the night before, which is called Allhallow E'en, is celebrated by various rural sports and modes of divination. With the commencement of November, however, the gaiety of nature seems to cease. Among birds, however, November is a gayer month than July and August; for, in November, many of them sing as agreeably as in early spring. In this month most of the summer birds take their departure, but the winter birds arrive to take their places. Among these winter birds, one of the best songsters is the redwing, which arrives in flocks from the north and north-east of



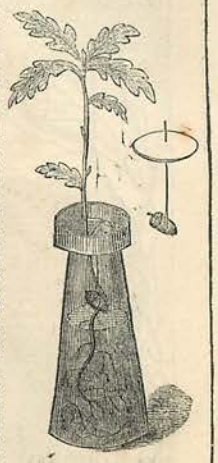
REDWING.

Europe, not later than the first week in November, arriving generally a week or two before the fieldfare; and, when the winters are severe, Mr. Yarrell informs us that it has been observed "that the redwings are unable to bear hard weather so well as the fieldfares. While in this country, the redwings inhabit parks and pleasure-grounds that are ornamented with clumps of trees; and, like the common thrush, which they most resemble in their external appearance, they seek their subsistence in mild and open weather in pasture lands and moist meadows, feeding principally on worms, snails, and other soft-bodied animals. They are much less inclined to feed on berries than most of the thrush tribe; and, should the resources usually obtained by their search on the ground be closed against them by long-continued frost and snow, the redwings are the first among birds to suffer; and during some severe seasons, such as 1799, 1814, and 1822, hundreds have been found almost starved, alike unable to prosecute their journey farther south to more congenial countries, or to bear the rigour of this." The song of the redwing is generally allowed to be very beautiful; and Linnæus, several times in his *Tour in Lapland*, mentions the song of the redwing, "whose amorous warblings from the top of a spruce fir," he says, "were delightful; its high and varied notes rivalling those of the nightingale herself." Other writers praise the "delightfully wild notes" of this bird, and mention that in Sweden and Norway, where it breeds, it is excessively shy when any one approaches its nest.

Oysters are in perfection in this month. They are generally found fixed to a rock, or some other submarine object, apparently enjoying only the nourishment brought by the waves, and scarcely giving any sign of life except by the opening and shutting of the valves. The oysters adhere to stones and other objects by means of a mucilaginous liquid with which they are covered as soon as they are formed, and which seems to be of the same nature as that with which they increase their shells. In some places, particularly at the months of the great African rivers, where there are great quantities of mangrove trees growing with their trunks several feet deep in the water, great quantities of oysters are found attached to the roots and lower branches of the trees; so that, as Mrs. Lee tells us, it is by no means an uncommon occurrence to send a slave to cut off a branch or two of the tree-oyster to furnish a meal. She adds, that these oysters, which are generally very small, are remarkably delicate in their flavour. Oysters are also often found fixed to the backs of crustaceous animals—such as crabs and lobsters; and occasionally to the shells of other molluscous animals. As oysters belong to that class of molluscous animals which are furnished with two muscles attaching them to their shells, they can shut the valves with great force, and compress them close with extraordinary tenacity. Several curious stories are told of monkeys being caught by oysters in this manner; and on one occasion, it is said that a cat, having ventured on the sea-shore at low water, and having attempted to seize an oyster fixed firmly to a rock, was caught by the oyster closing the valves of its shell the moment it was pricked by the claw of the cat, and held there till it was drowned by the coming in of the tide.

The fieldfare, which is very nearly allied to the redwing, appears later in the season, arriving in large flocks, which spread themselves over the whole country, covering the pasture lands, and particularly the neighbourhood of rickyards, in search of worms and slugs, or any other soft-bodied animals that they can find, though on the appearance of frost and snow they fly to the hedges and feed upon any berries they can find. The call note of the fieldfare is very harsh; and though its song is harmonious, it is very inferior in beauty to that of the redwing. The common song thrush remains in England all the year, and it feeds principally on insects, worms, and snails, picking the latter off the walls or trees on which they have fixed themselves to pass the winter, and breaking the shell very adroitly by beating it against a stone or a wall.

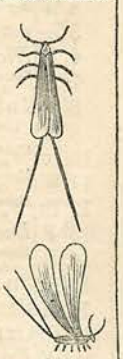
At this season, when the summer flowers are all over, and the ground is frequently covered with snow, there is scarcely anything left in the open air to interest the lover of a garden. It is true there is the resource of greenhouse plants; but plants in pots, when kept in a room, have generally an unhealthy appearance, as they are seldom set out in the open air, and they are kept continually in an atmosphere which is highly injurious to them. At this season, therefore, it is very desirable to try experiments on vegetation, and the method which has been discovered of raising plants in hyacinth-glasses affords a very agreeable substitute for the interest which is felt in spring by the amateur gardener in watching the developement of vegetation in the open air. It is not exactly known with whom the idea of raising plants in this manner first originated, but it has been practised for some years, as some ladies residing near Epsom had, in 1835, eaten nuts from hazel bushes which they had reared in glasses, and afterwards planted out into the open ground. The mode of managing acorns in hyacinth-glasses is thus given in the *Field Naturalist* for April, 1833:—"Let a common hyacinth-glass, or other glass if more convenient, be filled about half or a third part full of water; and a piece of card be prepared as a cover for the opening of the glass, so as to fit close and exclude the air. Fasten a strong thread or a piece of brass wire round an acorn—not iron wire, for it will rust and corrode the acorn, and frustrate the experiment. Suspend the thread or brass wire from the card, or from a small transverse bar of wood or metal beneath it, so that the acorn may be sustained at a short distance above the surface of the water, but near enough for the steam, which will be generated by the glass being kept in a warm room, to be communicated to the acorn, from which it will depend in a large drop. In a few weeks the germ will be found to burst the shell of the acorn; and in about a fortnight afterwards, the radicle, or little root, will protrude itself through the cleft, and take a downward direction into the water, where it will be continually extended and enlarged, by degrees throwing out external fibres, until, after a few days more, the other member of the germ will be seen to rise upwards till it comes near the card that covers the vessel, through which a hole must be cut to allow of its free passage. This forms the stem of the tree, which will shortly be seen to throw out two cotyledons, or seed leaves, at its extremity, and shortly again other leaves; till, in the course of a few weeks from the commencement of the experiment, the tree will have grown to the height of several inches, and be ornamented at its top with leaves two or three inches long, and wide in proportion, besides smaller ones breaking out at its sides, the root meanwhile having continued growing to a length exceeding that of the stem." In the year 1842, an account of this method of growing oaks was given in Paxton's *Magazine of Botany*, substituting a piece of cork for the card, and thread for the brass wire. In all other respects the experiment was the same. Supposing the acorn to be put into the glass in November, it will probably begin to germinate in January, or sooner, according as the acorn was fresh or old. If the acorn were but just gathered when it was put in, it will probably begin to germinate in the course of a month or six weeks at farthest; but if it were an acorn of the previous year, it would most probably not show any signs of life for a couple of months, or even more. The great point to be attended to is, keeping the cavity in the upper part of the glass above the water firmly closed, so as to prevent any evaporation of the water into the open air, since it will be impossible for the acorn to germinate unless the moisture which rises from the water is condensed and thrown back upon it; for it must be observed that air and moisture are both essential to germination, and that if the acorn is suffered to be in the water the air cannot have access to it so as to make it grow. Many instances, indeed, have been known of seeds having remained under water for several years without vegetating; but which, the moment they were exposed to the air, began to grow: while, on the other hand, seeds, when kept perfectly dry, though they are exposed to the influence of the air, will remain an extraordinary length of time without germinating.



GERMINATION OF AN ACORN IN WATER.

Among the many interesting plants grown in the Botanic Garden at Kew, may be mentioned the *Opúntia cochinillífera*, a kind of Indian fig, which is often attacked by a species of *Cóccus*, which, when dried, forms the scarlet dye which we call cochineal. This Indian fig is very common in Mexico, where it is called the Nopal-tree, and where it is considered of so much consequence, from the value of the insects bred upon it, that it is introduced in the arms of the Republic. The *Opúntia* is a species of *Cáctus*, with large, flat, roundish, leaf-like stalks, which produce the flowers and fruit, without the tree bearing any leaves properly so called. On these flat, leaf-like stalks, which are extremely succulent, there often appears a white woolly substance, resembling what is called the American blight on apple-trees; and this woolly substance is the covering of the female cochineal insect, which is the insect used for the dye. When fully grown, these insects are collected in Mexico and other countries where the plant grows in great abundance, by women, who brush them off with the tail of a squirrel or a deer. They are then killed by dipping them in boiling water, or exposing them to heat in ovens or the sun, and are then ready for sale. The cochineal insect was formerly confined to Mexico; but, in the beginning of the year 1777, M. Thierry de Menonville was employed by the French Government to procure some of the insects from Mexico, for the purpose of introducing them into the French West India Islands—an enterprise for which four thousand livres had been allotted by the French Government. M. Thierry de Menonville "proceeded by the Havannah to la Vera Cruz, and was there informed that the finest cochineal insects were produced at Guaxaca, distant about seventy leagues. Pretending ill-health, he obtained permission to use the baths of the river Magdalena; but, instead of going thither, he proceeded, through various difficulties and dangers, as fast as possible to Guaxaca, where, after making his observations, and obtaining the requisite information, he affected to believe that the cochineal insects were highly useful in compounding an ointment for his pretended disorder (the gout), and therefore purchased a quantity of Nopals covered with these insects, of the fine or domestic breed, and putting them in boxes with other plants, for their better concealment, he found means to get them away as botanic trifles, unworthy of notice, notwithstanding the prohibitions by which the Spanish Government had endeavoured to hinder their exportation; and being afterwards driven by a violent storm into the bay of Campeachy, he there found, and added to his collection, a living *Cáctus*, of a species which was capable of nourishing the fine domesticated cochineal. After which, departing for St. Domingo, he arrived safely with his acquisitions, on the 25th of September in the same year, at Port-au-Prince." The insects thus introduced succeeded so well, that, in ten or twelve years, St. Domingo became a powerful rival to Mexico in the production of the cochineal; but, during the political troubles of St. Domingo which followed the French Revolution, the plantations were destroyed. The value of the cochineal exported from Mexico is said by Humboldt to be about £500,000 annually. It is the female insect only from which the dye is taken; and the male insect has wings.

THE FEMALE OF THE COCHINEAL INSECT (COCCUS CACTI).



THE MALE OF THE COCHINEAL INSECT.

NOTES ON NATURAL HISTORY.—DECEMBER.

In December, the robin redbreast and the wren are almost the only birds that are found cheerfully hopping about near dwelling-houses. The robin, in fact, becomes more familiar at this season ; and, as Thomson beautifully expresses it,—

> The redbreast, sacred to the household gods,
> Wisely regardful of th' embroiling sky,
> In joyless fields and thorny thickets leaves
> His shivering mates, and pays to trusted man
> His annual visit. Half afraid, he first
> Against the window beats; then brisk alights
> On the warm hearth ; then, hopping o'er the floor,
> Eyes all the smiling family askance,
> And pecks, and starts, and wonders where he is:
> Till, more familiar grown, the table crums
> Attract his slender beak.

In Italy, Mr. Waterton informs us, the robin redbreast is used as food ; and he says, in the bird-market near the Rotunda, at Rome, he has counted more than fifty robin redbreasts lying dead on one stall.

The fearful cry of the owl sounds more alarming in winter than at any other season; and the form of the barn owl flitting through the leafless trees has a more striking and ghost-like appearance in winter than it ever can have in summer. "The characters and appearance of owls," says Mr. Yarrell, "are so singular and so peculiar, that, once having seen them, they are not readily forgotten. They have but little external beauty of form. The head is large, the expression grotesque, and the body bulky in appearance, though the plumage is soft and downy. Unlike the falcons, which hunt for their food by day, the owls seek their prey during the twilight of morning and evening, and probably during the greater part of the night, if the state of the moon or the atmosphere affords sufficient light for the purpose. From this habit of flying by night, the singular appearance of the bird produced by the arrangement of the feathers of the face, forming a broad circular disk, a peculiar hollow tone of voice, unlike that of any other bird, and the additional circumstance of most of the species selecting ivy-covered ruins of sacred edifices as places of resort, from the solitude and protection the character of such remains afford, owls have been considered by the superstitious as birds of darkness and ill-omen, and by some even as messengers of death." The little Italian owl, or *civetta*, is much prized, Mr. Waterton tells us, "by the gardeners of Italy, for its uncommon ability in destroying insects, snails, slugs, reptiles, and mice. There is scarcely an out-house in the gardens and vineyards of that country which is not tenanted by the *civetta*. It is often brought up tame from the nest; and in the month of September is sold for a dollar to sportsmen, who take it with them in their excursions through the country, to look for larks and other small birds. Perched on the top of a pole, it attracts their notice and draws them within the fatal range of gunshot by its most singular gestures; for, standing bolt upright, it curtsies incessantly, with its head somewhat inclined forwards, whilst it keeps its eyes fixed on the approaching object. This odd movement is peculiar to the *civetta* alone, and by it the birds of the neighbourhood are decoyed to their destruction. Hence its value to the ranging sportsman. Often and anon as the inhabitants of Rome pass through the bird-market at the Pantheon, they stop and look, and laugh at this pretty little captive owl, whilst it is performing its ridiculous gesticulations." The scops-eared owl is very nearly allied to this species, and, though it is most abundant in Italy, it is occasionally to be seen in Great Britain; and on the shores and islands of the Mediterranean it is very abundant; and Mr. Spence, the well-known entomologist, has thus recorded its summer habits in the *Magazine of Natural History*:—"This owl, which in summer is very common in Italy, is remarkable for the constancy and regularity with which it utters its peculiar note or cry. It does not merely 'to the moon complain' occasionally, but keeps repeating its plaintive and monotonous cry of '*Kew, kew*' (whence its Florentine name of *Chiù*, pronounced almost exactly like the English letter Q), in the regular intervals of about two seconds, the livelong night; and till one is used to it nothing can well be more wearisome. Towards the end of April, 1830, one of these owls established itself in the large Jardin Anglais, behind the house where we resided at Florence; and, until our departure for Switzerland, in the beginning of June, I recollect but one or two instances in which it was not constanty to be heard, as if in spite to the nightingales which abounded there, from nightfall to midnight (and probably much later), whenever I chanced to be in the back part of the house, or took our friends to listen to it, and always with precisely the same unwearied cry, and the intervals between each as regular as the ticking of a pen dulum."

SCOPS-EARED OWL.

At this gloomy season of the year every flower is valuable ; but the Christmas rose, which generally appears in flower about this time, is valuable not only from the absence of other flowers, but for its own intrinsic merits. It is a large, handsome, cup-shaped flower, looking like a single rose, and being either white or a very pale pink ; and though, in the open air, the delicate texture of its flowers is often injured by the frost, or melting snow which so frequently covers the ground at the dreary season when it appears, yet, when grown in a sheltered place, or when the weather chances to be mild, it is as ornamental as any of the flowers of summer. It is a species of hellebore, and its botanic name is *Helléborus niger* (or the black hellebore), from the black skin which covers its fleshy underground stem, or root, as it is commonly called, though there are attached to this fleshy substance abundance of the real or fibrous roots. The plant is used in medicine, but it is poisonous when taken to excess ; and, in fact, its very name of hellebore is taken from two Greek words, signifying deadly food. There are several kinds of hellebore, but the Christmas rose is by far the most ornamental.

CHRISTMAS ROSE.

The fragrant coltsfoot (*Tussilago frágrans*) is another plant which flowers about Christmas ; and it is not only ornamental, but very fragrant. All the kinds of coltsfoot are considered efficacious in colds and coughs ; and, in fact, the Latin name of the genus is derived from *tussis*, a cough.

Among the few other plants in flower at this season may be mentioned the curious variety of hawthorn called the Glastonbury thorn, which is said always to flower exactly on Christmas Day. Of course, this is not the case ; but it is a fact that the plant blossoms again in December, though it has ripe fruit on it from its previous blossoming at the ordinary season in May. The legend is, that, in the ancient times, Glastonbury was situated on an island called Avalon ; the waters that surrounded it, and which consisted of a lake communicating with the sea, being now dried up, though where the lake formerly was is still marshy ground. Joseph of Arimathea is said to have come to Britain with his disciples, to preach the Gospel, in the year 36 ; and he having landed on the isle of Avalon, struck his stick into the ground, which immediately took root, budded, and blossomed, being on the Christmas Day ; and, since that time, the plant has always budded and blossomed on Christmas Day. The Glastonbury thorns, which are now common in every part of England, are all taken from an original stock, still existing within the ruins of Glastonbury Abbey ; but it is said that there is another in the neighbourhood, which is much older than the one growing in the ruins, and which blossoms about the same time.

In the New Forest there is an oak which sends forth its leaf-buds about the middle of December, and which, on Christmas Day, has frequently several leaves expanded. They do not, however, long remain, as the country people generally assemble on the Christmas morning and strip the tree of every leaf they can find. The tree is called the Cadenham Oak, and it is said by some to be the identical tree against which the arrow of Tyrrel glanced when it killed William Rufus ; as, in the account given by Camden of the accident, he expressly mentions the early vegetation of the tree which was the occasion of the accident. According to other authors, however, it appears that there is another tree in the Forest which vegetates at the same time as the Cadenham Oak, and which is close to the monument of Rufus. There was, formerly, another very remarkable tree in the New Forest, from the root of which strange noises, like fearful groans, used to issue in the month of December, particularly when the weather was clear and frosty. The tree was a young and vigorous elm ; and the groaning, which was never heard but in the depth of winter, was heard by thousands. It was observed, however, that the tree did not groan when the weather was wet, but only when it was clear and frosty. At length the owner of the tree, a gentleman of the name of Forbes, after trying several experiments, bored a hole in its trunk. "After this it never groaned. It was then rooted up, with a further view to make a discovery; but still nothing appeared which led to any investigation of the cause. It was, however, universally believed that there was no trick in the affair, but that some natural cause really existed, though never understood."

Almost all the insects which live through the winter are in a torpid state at this season, and most of the moths and butterflies are dead, having left their eggs secured in various ways, so that they may be enabled to bear the cold of winter, and be ready to be hatched in the spring. Thus, the eggs of the lackey-moth, to use the words of Messrs. Kirby and Spence, "are packed as closely as possible to each other, and the interstices are filled up with a tenacious gum, which soon hardens the whole into a solid mass, almost capable of resisting a penknife." The female of the gipsy-moth also crowds her eggs together as closely as she possibly can, and when she has formed them into an oval mass, she covers them with a warm coating of hairs plucked from her own body, which she makes so thick, and fixes on so firmly, as to render the covering equally impervious to cold and wet. Even the *Aphis* coats her eggs over so as to make them appear perfectly black ; and the beetles generally bury theirs to a considerable depth in the ground, instinct teaching them that the frost, which destroys everything exposed to the atmospheric air, never penetrates more than a few inches into the ground. In some few cases moths hybernate, like beetles, in a perfect state, and the December Moth is found occasionally sticking, apparently lifeless, against the trunks of trees. The Herald Moth is also occasionally seen at this season, and it is so torpid that it will suffer itself to be taken in the hand without making any effort to escape. Even when a finger is put near it, it only moves its head and antennæ a little, without attempting to fly away. A moth of this species was observed by the Rev. Leonard Jenyns to remain in a torpid state upwards of seven month. The most remarkable insect, however, seen at this season, is the one known in the south of Scotland by the name of the Devil's Butterfly; and which, in various parts of England, is called the Witch's Butterfly, as it may be seen on the wing on fine sunshiny days during the whole of the winter. The true name of this butterfly is the small tortoise-shell (*Vanéssa úrticæ*) ; and its caterpillars, which feed on the nettle, are nearly black, with four bright yellow stripes, two along the back and one on each side, the whole body being covered with fine branched spines. The pupa of this caterpillar is very curious, looking like a lady with an old-fashioned hood, and being always suspended by a thread. There appear to be at least two broods of this insect every year—one being hatched in June, and the other in the latter end of October. It is very common in the south of Europe, and particularly in Italy.

SMALL TORTOISE-SHELL BUTTERFLY.

The common house-fly is subject to rather a singular disease at this season ; and flies are often found sticking to the leaves of ivy and other evergreens—the flies, though they appear to be alive, being quite dead, and adhering to the leaf by a kind of cottony mildew, which is, in fact, a peculiar sort of fungus. The Rev. L. Jenyns, mentioning this singular fact, adds, that it seems owing to the chill and dampness of an autumnal night coming on suddenly, as at this season the temperature of the air at sunset, especially if the sky be clear, falls rapidly. The Rev. M. J. Berkeley mentions that this fungus, no doubt, attacks the fly while living, though it is not fully developed till after death. The reason why it prevails in autumn, he adds, is that the dampness of the air at that season is favourable to the growth of all kinds of mould, and that the suddenness with which flies appear to be attacked with it is merely the rapid growth of the fungus, from the state of the atmosphere. Gold fish are frequently attacked at the beginning of winter with a white downy matter, similar to that found on flies, and which generally proves equally fatal. The nests of wasps may be sought for at this season and destroyed, as wasps are frequently found in them in a torpid state from the cold, and nearly every wasp that survives the winter will form a nest the following summer ; the economy of wasps being different from that of bees, and each old female wasp forming a new colony of her own.