

## SIGNS AND SEASONS.

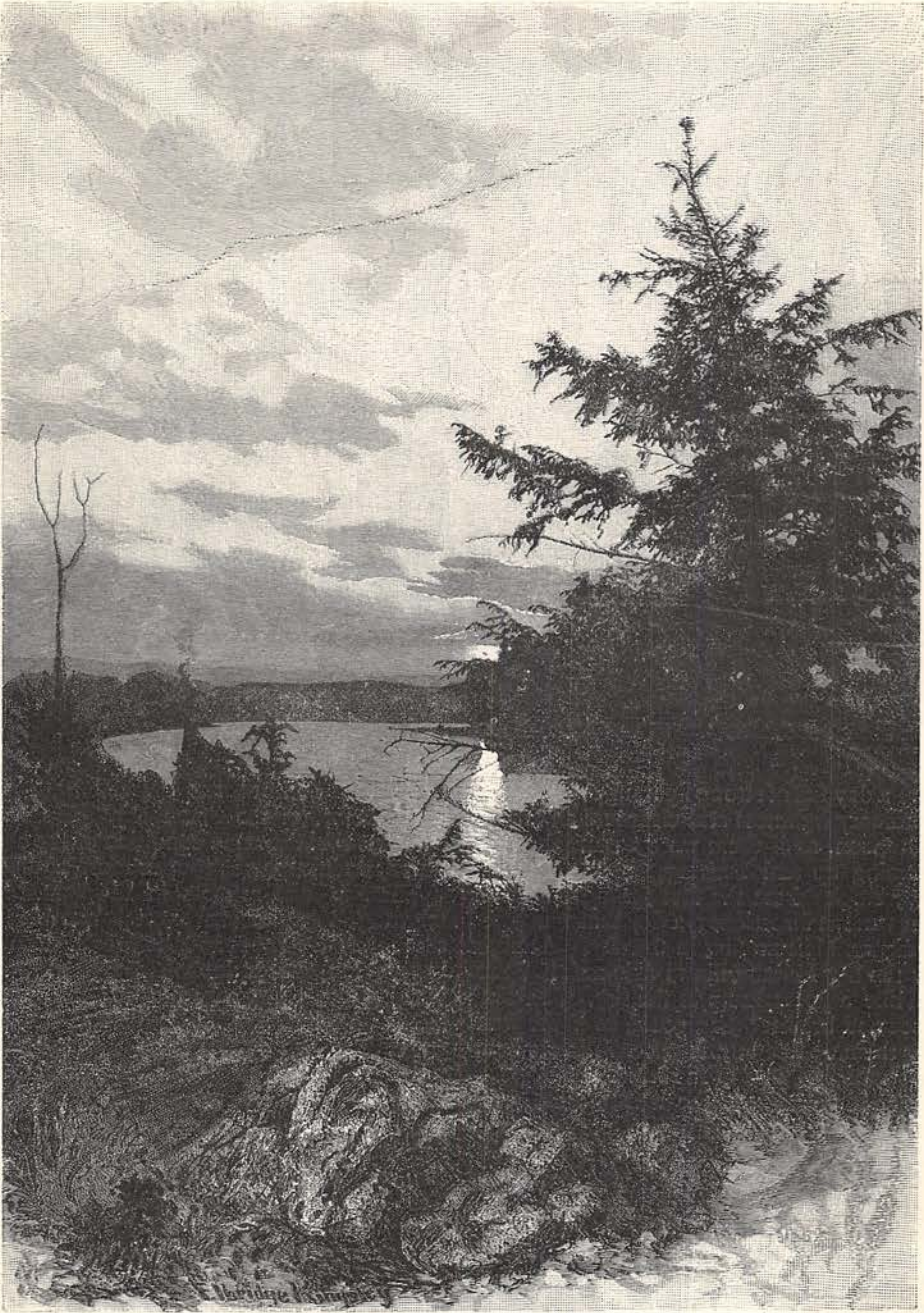
ONE has only to sit down in the woods or fields, or by the shore of the river or lake, and nearly everything of interest will come round to him,—the birds, the animals, the insects; and presently, after his eye has got accustomed to the place, and to the light and shade, he will probably see some plant or flower that he had sought in vain for and that is a pleasant surprise to him. So, on a large scale, the student and lover of nature has this advantage of people who gad up and down the world, seeking some novelty or excitement; he has only to stay at home and see the procession pass. The great globe swings around to him like a revolving show-case; the change of the seasons is like the passage of strange and new countries; the zones of the earth, with all their beauties and marvels, pass one's door, and linger long in the passing. What a voyage is this we make without leaving for a night our own fireside! St. Pierre well says that a sense of the power and mystery of nature shall spring up as fully in one's heart after he has made the circuit of his own field as after returning from a voyage round the world. I sit here amid the junipers of the Hudson, with purpose every year to go to Florida, or to the West Indies, or to the Pacific coast, yet the seasons pass and I am still loitering, with a half-defined suspicion, perhaps, that, if I remain quiet and keep a sharp lookout, these countries will come to me. I may stick it out yet, and not miss much after all. The great trouble is for Mahomet to know when the mountain really comes to him. Sometimes a rabbit or a jay or a little warbler brings the woods to my door. A loon on the river, and the Canada lakes are here; the sea-gulls and the fish-hawk bring the sea; the call of the wild gander at night, what does it suggest? and the eagle flapping by or floating along on a raft of ice, does not he bring the mountain? One spring morning five swans flew above my barn in single file going northward—an express train bound for Labrador. It was a more exhilarating sight than if I had seen them in their native haunts. They made a breeze in my mind, like a noble passage in a poem. How gently their great wings flapped; how easy to fly when spring gives the impulse! On another occasion I saw a line of fowls, probably swans, going northward, at such a height that they appeared like

a faint, wavering, black line against the sky. They must have been at an altitude of three or four miles. I was looking intently at the clouds to see which way they moved, when the birds came into my field of vision. As it was near sun-down they were probably launched for an all-night pull. They were going with great speed, and as they swayed a little this way and that, they suggested a slender, all but invisible, aërial serpent cleaving the ether. What a highway was pointed out up there!—an easy grade from the Gulf to Hudson's Bay.

Then the typical spring and summer and autumn days, of all shades and complexions, one cannot afford to miss one of them, and when looked out upon from one's own spot of earth, how much more beautiful and significant they are! Nature comes home to one most when he is at home; the stranger and the traveler finds her a stranger and traveler also. One's own landscape comes in time to be a sort of outlying part of himself; he has sowed himself broadcast upon it, and it reflects his own moods and feelings; he is sensitive to the verge of the horizon: cut those trees, and he bleeds; mar those hills, and he suffers. How has the farmer planted himself in his fields; builded himself into his stone walls, and evoked the sympathy of the hills by his struggle! This home feeling, this domestication of nature, is important to the observer. This is the bird-lime with which he catches the bird; this is the private door that admits him behind the scenes. This is one source of Gilbert White's charm and of the charm of Thoreau's "Walden." These men staid at home; they made their nests, and took time to brood and hatch.

The birds that come about one's door in winter, or that build in his trees in summer, what a peculiar interest they have! What crop have I sowed in Florida or in California, that I should go there to reap? I should be only a visitor, or formal caller upon nature, and the family would all wear masks. No; the place to observe nature is where you are: the walk to take to-day is the walk you took yesterday. You will not find just the same things: both the observed and the observer have changed; the ship is on another tack in both cases.

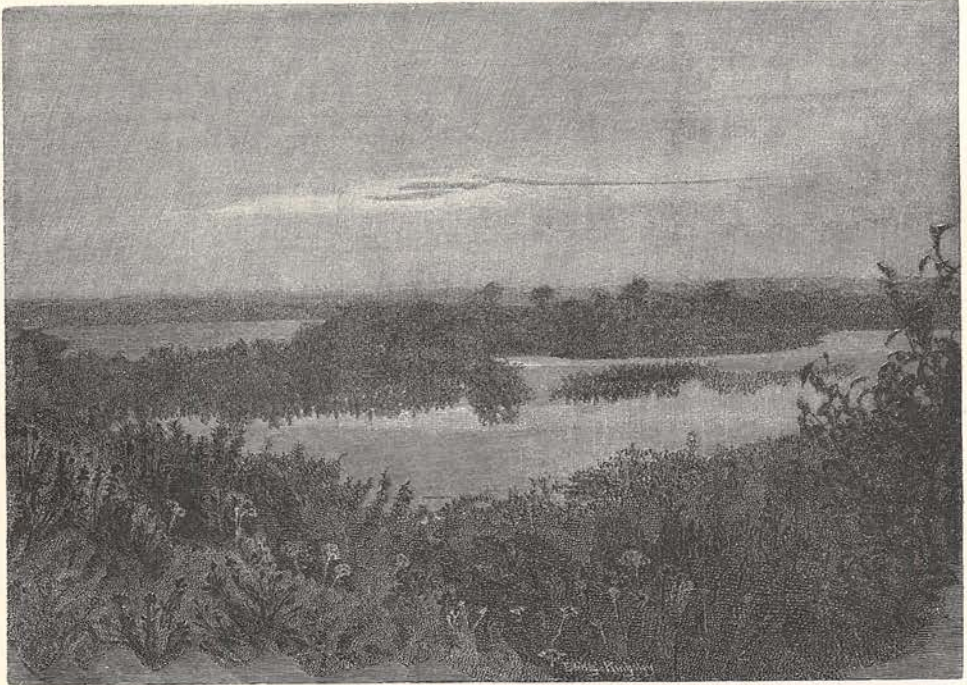
I shall probably never see another just such day as yesterday was, because one can never exactly repeat his observation—can-



FLIGHT OF THE BIRDS.

not turn the leaf of the book of life backward, and because each day has characteristics of its own. This was a typical March day, clear, dry, hard, and windy, the river ruffled and crumpled, the sky intense, distant objects strangely

uniformly diffused through it." Again, he says that the mountaineers of the Alps "predict a change of weather, when, the air being calm, the Alps covered with perpetual snow, seem on a sudden to be nearer the observer,



THE GATHERING STORM.

near; a day full of strong light, unusual; an extraordinary lightness and clearness all around the horizon, as if there were a diurnal aurora streaming up and burning through the sunlight; smoke from the first spring fires rising up in various directions; a day that winnowed the air, and left no film in the sky. At night how the big March billows did work! Venus was like a great lamp in the sky. The stars all seemed brighter than usual, as if the wind blew them up like burning coals. Venus actually seemed to flare in the wind.

Each day foretells the next, if one could read the signs; to-day is the progenitor of to-morrow. When the atmosphere is telescopic, and distant objects stand out unusually clear and sharp, a storm is near. We are on the crest of the wave, and the depression follows quickly. It often happens that clouds are not so indicative of a storm as the total absence of clouds. In this state of the atmosphere the stars are unusually numerous and bright at night, which is also a bad omen.

I find this observation confirmed by Humboldt. "It appears," he says, "that the transparency of the air is prodigiously increased when a certain quantity of water is

and their outlines are marked with great distinctness on the azure sky." He further observes that the same condition of the atmosphere renders distant sounds more audible.

There is one redness in the east in the morning that means storm, another that means wind. The former is broad, deep and angry; the clouds look like a huge bed of burning coals just raked open; the latter is softer and more vapory. Just at the point where the sun is going to rise, and some minutes in advance of his coming, there rises straight upward a rosy column; it is like a shaft of deeply dyed vapor, blending with and yet partly separated from the clouds, and the base of which presently comes to glow like the sun itself. The day that follows is pretty certain to be very windy.

The approach of great storms is seldom heralded by any striking or unusual phenomenon. The real weather gods are free from brag and bluster; but the sham gods fill the sky with portentous signs and omens. The 5th of last March was a day that would have filled the ancient observers with dreadful forebodings. At ten o'clock the sun was attended by four extraordinary sun-dogs. A

large bright halo encompassed him, on the top of which the segment of a larger circle rested, forming a sort of heavy brilliant crown. At the bottom of the circle, and depending from it, was a mass of soft, glowing, iridescent vapor. On either side, like fragments of the larger circle, were two brilliant arcs. Altogether, it was the most portentous storm-breeding sun I ever beheld. In a dark hemlock wood in a valley, the owls were hooting ominously, and the crows dismally cawing. Before night the storm set in, a little sleet and rain of a few hours' duration, insignificant enough compared with the signs and wonders that preceded it.

To what extent the birds or animals can foretell the weather is uncertain. When the swallows are seen hawking very high it is a good indication; the insects upon which they feed venture up there only in the most auspicious weather. Yet bees will continue to leave the hive when a storm is imminent. I am told that one of the most reliable weather signs they have down in Texas is afforded by the ants. The ants bring their eggs up out of their underground retreats and expose them to the warmth of the sun to be hatched. When they are seen carrying them in again in great haste, though there be not a cloud in the sky, your walk or your drive must be post-

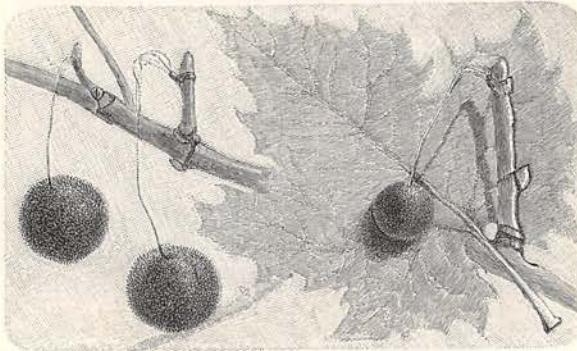
is one of the latest metrical translations. Dryden has it:

"The careful ant her secret cell forsakes  
And drags her eggs along the narrow tracks."

which comes nearer to the fact. When a storm is coming Virgil also makes his swallows skim low about the lake, which agrees with the observation above.

In observing the weather, however, as in the diagnosis of disease, the diathesis is all-important. All signs fail in a drought, because the predisposition, the diathesis, is so strongly toward fair weather; and the opposite signs fail during a wet spell, because nature is caught in the other rut.

Observe the lilies of the field. Sir John Lubbock says the dandelion lowers itself after flowering, and lies close to the ground while it is maturing its seed, and then rises up. My dandelions continue to grow after the flower has dropped; the stalk lengthens daily, keeping just above the grass till the fruit is ripened, and the little globe of silvery down is carried many inches higher than was the ring of golden flowers. And the reason is obvious. The plant depends upon the wind to scatter its seeds; every one of these little vessels spreads a sail to the breeze, and it is necessary that they be launched above the grass and weeds, amid



BUTTON BALLS.

poned: a storm is at hand. There is a passage in Virgil that is doubtless intended to embody a similar observation, though none of his translators seem to have hit its meaning accurately:

"Saepius et tectis penetralibus extulit ova  
Angustum formica terens iter:"

"Often also has the pismire making a narrow road brought forth her eggs out of the hidden recesses" is the literal translation of old John Martyn.

"Also the ant, incessantly traveling  
The same straight way with the eggs of her hidden store,"

which they would be caught and held did the stalk not continue to grow and outstrip the rival vegetation. It is a curious instance of foresight in a weed.

I wish I could read as clearly this puzzle of the button-balls (American plane-tree). Why has nature taken such particular pains to keep these balls hanging to the parent tree intact till spring? What secret of hers has she buttoned in so securely, for these buttons will not come off. The wind cannot twist them off, nor warm nor wet hasten or retard them. The stem, or peduncle, by which the ball is held in the fall or winter, breaks up into a dozen or more threads or strands, that



AMONG THE PINES.

are stronger than those of hemp. When twisted tightly they make a little cord that I find it impossible to break with my hands. Had they been longer the Indian would surely have used them to make his bow-strings and all the other strings he required. One could hang himself with a small cord of them. (In South America, Humboldt saw excellent cordage made by the Indians from the petioles of the Chiquichiqui palm.) Nature was determined that these buttons should stay on. In order that the seeds of this tree may germinate it is probably necessary that they be kept dry during the winter, and reach the ground after the season of warmth and moisture is fully established. In May, just as the leaves and the new balls are emerging, at the touch of a warm,

moist south wind, these spherical packages suddenly go to pieces—explode, in fact, like tiny bomb-shells that were fused to carry to this point and scatter their seeds to the four winds. They yield at the same time a fine pollen-like dust that one would suspect played some part in fertilizing the new balls, did not botany teach him otherwise. At any rate, it is the only deciduous tree I know of that does not let go the old seed till the new is well on the way. It is plain why the sugar-berry tree (*Celtis*) holds its drupes all winter: it is in order that the birds may come and sow the seed. The berries are like small gravel stones with a sugar coating, and a bird will not eat them till he is pretty hard pressed, but in late fall and winter the robins, cedar birds, and

blue birds devour them readily, and of course lend their wings to scatter the seed far and wide. The same is true of the juniper.

One must always cross-question nature if he would get at the truth, and he will not get at it then unless he frames his questions with great skill. Most persons are unreliable observers because they put only leading questions, or vague questions.

People live in the country all their lives without making one accurate observation about Nature. The evergreen trees in front of their doors—what do they know about their habits? Do the pine and the hemlock shed their leaves? Not in any strict sense. In the deciduous trees the new leaves take the place of the old; they come out in the axils of the old leaves, and the branch is re-clothed each spring, even if no new shoots appear. Not so with the pine or the hemlock; they turn over a new leaf only when they turn over a new growth of wood. The white pine usually sheds its leaves in midsummer, though I have known all the pines to delay till October. It is on with the new love before it is off with the old. From May till near autumn it carries two crops of leaves, last year's and the present year's. Emerson's inquiry

—“how the sacred pine-tree adds  
To her old leaves new myriads,”

is framed in strict accordance with the facts. It is to her *old* leaves that she adds the new. Only the new growth, the outermost leaves, are carried over till the next season, thus keeping the tree always clothed and green. As its molting season approaches, these old leaves, all the rear ranks on the limbs, begin to turn yellow, and a careless observer might think the tree was struck with death; but it is not. The decay stops just where the growth of the previous spring began, and presently the tree stands green and vigorous, with a newly-laid carpet of fallen leaves beneath it. But the same is not true of the hemlock, or the spruce, or the red cedar. These trees do not shed their leaves periodically, but outgrow them gradually, as they do their bark, or as a person outgrows or wears out his clothes, here a shred and there a shred, a bit to-day or a bit to-morrow, and were it not for the new growth made each spring, they would, in time, become quite naked. The winds and storms whip them off, and, as the branches grow, the old leaves gradually disappear, leaving a naked stem. But none of the coniferæ renew their leaves as do the deciduous trees. New leaves come only upon new wood. If the tree were to cease to grow it would probably (though of this I am not certain) cease to shed its leaves. The pines

and firs and spruces differ still more radically from the deciduous trees. They have less scope, less versatility, fewer resources. They never sprout. Cut them down, and that is the end. Cut off a limb, and it is never renewed by a new shoot. Trim a pine or a hemlock closely and it will die; it has no power to start a branch *de novo*, to burst the bark with a new shoot. A sort of fatalism is characteristic of these trees. The limbs of the white pine tend to recur in regular intervals, like the rounds of a ladder. As it shoots upward in the forest it pulls this ladder up after it, so that the tallest trees are limbless for eighty or ninety feet.

When you cut off the top of a pine or spruce, removing the central and leading shaft, the tree does not develop and send forth a new one to take the place of the old, but a branch from the next in rank, that is, from the next whorl of limbs, is promoted to take the lead. It is curious to witness this limb rise up and get into position. One season I cut off the tops of some young hemlocks, that were about ten feet high, that I had balled in the winter and had moved into position for a hedge. The next series of branches consisted of three that shot out nearly horizontally. As time passed one of these branches, apparently the most vigorous, began to lift itself up very slowly toward the place occupied by the lost leader. The third year it stood at an angle of about forty-five degrees; the fourth year it had gained about half the remaining distance when the clipping shears again cut it down. In five years it would probably have assumed an upright position. A white pine of about the same height lost its central shaft by a grub that developed from the egg of an insect, and I cut it away. It rose from a whorl of four branches, and it now devolved upon one of these to take the lead. Two of them, on opposite sides, were more vigorous than the other two, and the struggle now is as to which of these two shall gain the mastery. Both are rising up and turning toward the vacant chieftainship, and, unless something interferes, the tree will probably become forked and led upward by two equal branches. I shall probably humble the pride of one of the rivals by nipping its central shoot. One of my neighbors has cut off a yellow pine about six inches in diameter so as to leave only one circle of limbs seven or eight feet from the ground. It is now the third year of the tree's decapitation, and one of this circle of horizontal limbs has risen up several feet, like a sleeper rising from his couch, and seems to be looking around inquiringly, as much as to say: “Come, brothers, wake up! Some one must take the lead here; shall it be I?”

The good observer of nature holds his eye long and firmly to the point, as one does when looking at a puzzle picture, and will not be baffled. The cat catches the mouse, not merely because she watches for him, but because she is armed to catch him and is quick. So the observer finally gets the fact, not only because he has patience, but because his eye is sharp and his inference swift. Many a shrewd old farmer looks upon the milky-way as a kind of weathercock, and will tell you that the way it points at night indicates the direction of the wind the following day. So also every new moon is either a

the truth that they do not. Do honey-bees injure the grape and other fruits by puncturing the skin for the juice? The most patient watching by many skilled eyes all over the country has not yet settled the point. For my own part, I am convinced that they do not. The honey-bee is not the rough-and-ready freebooter that the wasp and bumble-bee are; she has somewhat of feminine timidity, and leaves the first rude assaults to them. I knew the honey-bee was very fond of the locust blossoms, and that the trees hummed like a hive in the height of their flowering, but I did not know that the bumble-bee was the



WAITING FOR SPRING.

dry moon or a wet moon—dry if a powder-horn would hang upon the lower limb, wet if it would not; forgetting the fact that, as a rule, when it is dry in one part of the continent it is wet in some other part, and *vice versa*. When he kills his hogs in the fall if the pork be very hard and solid he predicts a severe winter; if soft and loose, the opposite; again overlooking the fact that the kind of food and the temperature of the fall make the pork hard or make it soft. So with a hundred other signs, all the result of hasty and incomplete observations. In most of the operations of nature there is one or more unknown quantity; to find the exact value of this unknown factor is not so easy. The wool of the sheep, the fur of the animals, the feathers of the fowls, the husks of the maize, why are they thicker some seasons than others; what is the value of the unknown quantity here? Does it indicate a severe winter approaching? Only observations extending over a series of years could determine the point. How much patient observation it takes to settle many of the facts in the lives of the birds, animals, and insects. Gilbert White was all his life trying to determine whether or not swallows passed the winter in a torpid state in the mud at the bottom of ponds and marshes, and he died ignorant of

sapper and miner that went ahead in this enterprise till one day I placed myself amid the foliage of a locust and saw him savagely bite through the shank of the flower and extract the nectar, followed by a honey-bee that in every instance searched for this opening and probed long and carefully for the leavings of his burly purveyor. The bumble-bee rifles the dicentra and the columbine of their treasures in the same manner, namely, by slitting their pockets from the outside, and the honey-bee gleans after him, taking the small change he leaves.

Speaking of the honey-bee reminds me that the subtle and sleight-of-hand manner in which it fills its baskets with pollen and propolis is characteristic of much of nature's doings. See the bee going from flower to flower with the golden pellets on its thighs, slowly and mysteriously increasing in size. If the miller were to take the toll of the grist he grinds by gathering the particles of flour from his coat and hat, as he moved rapidly about, or catching them in his pockets, he would be doing pretty nearly what the bee does. The little miller dusts itself with the pollen of the flower, and then while on the wing, brushes it off with the fine brush on certain of its feet, and by some jugglery or other, catches it in its pollen basket. One

needs to look long and intently to see through the trick. I have seen the bees come to a meal barrel in early spring, and to a pile of hard-wood sawdust before there was yet anything in nature for them to work upon, and having dusted their coats with the finer particles of the meal or the sawdust, hover on the wing above the mass till the little legerdemain feat is performed. Nature fills her baskets by the same sleight-of-hand, and the observer must be on the alert who would possess her secret. If the ancients had looked a little closer and sharper, would they ever have believed in spontaneous generation in the superficial way in which they did; that maggots for instance, were generated spontaneously in putrid flesh? Could they not see the spawn of the blowflies? Or if Virgil had been a real observer of the bees, would he ever have credited, as he certainly appears to do, the fable of bees originating from the carcass of a steer? But the ancients, like children, or like barbarous tribes, were not observers in the modern sense. Nature was too novel, or else too fearful to them to be deliberately pursued and hunted down. Their youthful joy in her, or else their dread and awe in her presence, may be better than our scientific satisfaction, or cool wonder, or our vague, mysterious sense of "something far more deeply inter-fused," yet we cannot change with them if we would, and I, for one, would not if I could. Science does not mar nature. The railroad, Thoreau found after all, to be about the wildest road he knew of, and the telegraph wires the best æolian harp out-of-doors. Study of nature deepens the mystery and the charm because it removes the horizon farther off. We cease to fear, perhaps, but how can one cease to marvel and to love?

The fields and woods and waters about one are a book from which he may draw exhaustless entertainment, if he would. One must not only learn the writing, he must translate the language, the signs, and the hieroglyphics. It is a very quaint and elliptical writing, and much must be supplied by the wit of the translator. At any rate, the lesson is to be well conned.

All we know about the private and essential natural history of the bees, the birds, the fishes, the animals, the plants, is the result of close, patient, quick-witted observation. Yet nature will often elude one for all his pains and alertness. Thoreau, as revealed in his journal, was for years trying to settle in his own mind what was the first thing that stirred in spring after the severe New England winter—in what was the first sign or pulse of returning life manifest; and he never seems to

have been quite sure. He could not get his salt on the tail of this bird. He dug into the swamps, he peered into the water, he felt with benumbed hands for the radical leaves of the plants under the snow; he inspected the buds on the willows, the catkins on the alders; he went out before daylight of a March morning and remained out after dark; he watched the lichens and mosses on the rocks; he listened for the birds; he was on the alert for the first frog ("Can you be absolutely sure," he says, "that you have heard the first frog that croaked in the township?") he stuck a pin here and he stuck a pin there, and there, and still he could not satisfy himself. Nor can any one. Life appears to start in several things simultaneously. Of a warm thawing day in February, the snow is suddenly covered with myriads of snow fleas looking like black, new powder just spilled there. Or you may see a winged insect in the air. On the self-same day the grass in the spring run and the catkins on the alders will have started a little, and if you look sharply while passing along some sheltered nook or grassy slope where the sunshine lies warm on the bare ground, you will probably see a grasshopper or two. The grass hatches out under the snow, and why should not the grasshopper? At any rate, a few such hardy specimens may be found in the latter part of our milder winters wherever the sun has uncovered a sheltered bit of grass for a few days, even after a night of ten or twelve degrees of frost. Take them in the shade, and let them freeze stiff as pokers, and when thawed out again they will hop briskly. And yet if a poet were to put grasshoppers in his winter poem, we should require pretty full specifications of him, or else fur to clothe them with. Nature will not be cornered, yet she does many things in a corner and surreptitiously. She is all things to all men; she has whole truths, half truths, and quarter truths, if not still smaller fractions. The careful observer finds this out sooner or later. Old fox-hunters will tell you, on the evidence of their own eyes, that there is a black fox and a silver gray fox, two species; but there are not; the black fox is black when coming toward you, or running from you, and silver gray at point blank view, when the eye penetrates the fur; each separate hair is gray the first half and black the last. This is a sample of nature's half truths.

Which are our sweet-scented wild flowers? Put your nose to every flower you pluck, and you will be surprised how your list will swell the more you smell. I plucked some wild blue violets one day, the *ovata* variety of the *sagittata*, that had a faint perfume of sweet clover, but I never could find another that





AN OBSERVER.

had any odor. A pupil disputed with his teacher about the hepatica, claiming in opposition that it was sweet-scented. Some hepaticas are sweet-scented and some are not, and the perfume is stronger some seasons than others. After the unusually severe winter of 1880-81, the variety of hepatica called the sharp-lobed (*acutiloba*) was markedly sweet in nearly every one of the hundreds of specimens I examined. A handful of them exhaled a most delicious perfume. The white ones that season were largely in the ascendant, and probably the white specimens of both varieties, one season with another, will oftenest prove sweet-scented. Darwin says a large percentage of all fragrant flowers (I have forgotten exactly his proportion) are white. The only sweet violets I can depend upon are white, *viola blanda* and *viola Canadensis*, and white largely predominates among our other odorous wild flowers. All the fruit-trees have

white or pinkish blossoms. I recall no native blue flower that is fragrant except in the rare case of the arrow-leaved violet, above referred to. The earliest yellow flowers, like the dandelion and yellow violets, are not fragrant. Later in the season yellow is frequently accompanied with fragrance, as in the evening primrose, the yellow lady's-slipper, horned bladderwort, and others.

My readers probably remember that on a former occasion I have mildly taken the poet Bryant to task for leading his readers to infer that the early yellow violet—*rotundifolia*—was sweet-scented. In view of the capriciousness of the perfume of certain of our wild flowers, I have during the past two years tried industriously to convict myself of error in respect to this flower. The round-leaved yellow violet was one of the earliest and most abundant wild flowers in the woods where my youth was passed, and whither I still

make annual pilgrimages. I have pursued it on mountains and in lowlands, in "beechen woods" and amid the hemlocks; and while, with respect to its earliness, it overtakes the hepatica in the latter part of April, as do also the dog's-tooth violet and the claytonia, yet the first hepaticas, where the two plants grow side by side, bloom about a week before the first violet. And I have yet to find one that has an odor that could be called a perfume. A handful of them, indeed, has a faint, bitterish smell, not unlike that of the dandelion in quality; but, if every flower that has a smell is sweet-scented, then every bird that makes a noise is a songster.

On the occasion above referred to, I also dissented from Lowell's statement, in "Al Fresco," that in early summer the dandelion blooms, in general, with the buttercup and the clover. I am aware that such criticism of the poets is small game and not worth the powder. General truth, and not specific fact, is what we are to expect of the poets. Bryant's "Yellow Violet" poem is tender and appropriate, and such as only a real lover and observer of nature could feel or express, and Lowell's "Al Fresco" is full of the luxurious feeling of early summer, and this is, of course, the main thing; a good reader cares for little else; I care for little else myself. But when you take your coin to the assay office it must be weighed and tested, and in the comments referred to I (unwisely, perhaps) sought to smelt this gold of the poets in the naturalist's pot to see what alloy of error I could detect in it. Were the poems true to their last word? They were not, and much subsequent investigation has only confirmed my first analysis. The general truth is on my side, and the specific fact, if such exists in this case, on the side of the poets. It is possible that there may be a fragrant yellow violet, as an exceptional occurrence, like that of the sweet-scented, arrow-leaved species above referred to, and that in some locality it may have bloomed before the hepatica; also, that Lowell may have seen a dandelion or two in June amid the clover and the buttercups; but, if so, they were the exception, and not the rule—the specific or accidental fact, and not the general truth.

Dogmatism about Nature, or about anything else, very often turns out to be an ungrateful cur that bites the hand that reared it. I speak from experience. I was once quite certain that the honey-bee did not work upon the blossoms of the trailing arbutus, but while walking in the woods one April day I came upon a spot of arbutus swarming with honey-bees. They were so eager for it that they crawled under the

leaves and the moss to get at the blossoms, and refused on the instant the hive-honey which I happened to have with me, and which I offered them. I had had this flower under observation more than twenty years, and had never before seen it visited by honey-bees. Hence I would not undertake to say again what flowers bees do not work upon. Virgil implies that they work upon the violet, and for aught I know they may. I have seen them very busy on the blossoms of the white oak, though this is not considered a honey or pollen-yielding tree. From the sumac (*R. glabra*) they reap a harvest in midsummer, and in March they get a good grist of pollen from the skunk cabbage.

I presume, however, it would be safe to say that there is a species of smilax with an unsavory name that the bee does not visit, *herbacea*. The production of this plant is a curious freak of nature. I find it growing along the fences where one would look for wild roses, or the sweet-brier; its recurving or climbing stem, its glossy, deep-green, heart-shaped leaves, its clustering umbels of small greenish-yellow flowers, making it very pleasing to the eye; but to examine it closely one must positively hold his nose. It would be too cruel a joke to offer it to any person not acquainted with it to smell. It is like the vent of a charnel-house. It is first cousin to the trilliums, among the prettiest of our native wild flowers, and the same bad blood crops out in the purple trillium or birthroot.

The good observer of nature exists in fragments, a trait here and a trait there. Each person sees what it concerns him to see. The fox-hunter knows pretty well the ways and habits of the fox, but on any other subject he is apt to mislead you. He comes to see only fox traits in whatever he looks upon. The bee-hunter will follow the bee, but lose the bird. The farmer notes what affects his crops and his earnings, and little else. Common people, St. Pierre says, observe without reasoning, and the learned reason without observing. If one could apply to the observation of nature the sense and skill of the South American *rastreador*, or trailer, how much he would track home. This man's eye is keener than a hound's scent. A fugitive can no more elude him than he can elude fate. His perceptions are said to be so keen that the displacement of a leaf or pebble, or the bending down of a spear of grass, or the removal of a little dust from the fence are enough to give him the clew. He sees the half-obliterated foot-prints of a thief in the sand, and carries the impression in his eye till a year afterward, when he again detects it in the suburbs of a city, and the culprit is tracked

home and caught. I knew a man blind from his youth who not only went about his own neighborhood without a guide, turning up to his neighbor's gate or door as unerringly as if he had the best of eyes, but who would go many miles on an errand to a new part of the country. He seemed to carry a map of the township in the bottom of his feet, a most minute and accurate survey. He never took the wrong road, and he knew the right house when he had reached it. He was a miller and fuller, and ran his mill at night while his sons ran it by day. He never made a mistake with his customers' bags or wool, knowing each man's by the sense of touch. He frightened a colored man whom he detected stealing, as if he had seen out of the back of his head. Such facts show one how delicate and sensitive a man's relation to outward nature through his bodily senses may become. Heighten it a little more, and he could forecast the weather and the seasons, and detect hidden springs and minerals. A good observer has something of this delicacy and quickness of perception. All the great poets and naturalists have it. Agassiz traces the glaciers like a *rastreador*, and Darwin misses no step that the slow but tireless gods of physical change have taken, no matter how they cross or retrace their course. In the obscure fish-worm he sees an agent that has kneaded and leavened the soil like giant hands.

One secret of success in observing nature, is capacity to take a hint; a hair may show where a lion is hid. One must put this and that together and value bits and shreds. Much alloy exists with the truth. The gold of nature does not look like gold at the first glance. It must be smelted and refined in the mind of the observer. And one must crush mountains of quartz and wash hills of sand to get it. To know the indications is the main matter. People who do not know the secret are eager to take a walk with the observer to find where the mine is that contains such nuggets, little knowing that his ore-bed is but a gravel-heap to them. How insignificant appear most of the facts which one sees in his walks, in the life of the

birds, the flowers, the animals, or in the phases of the landscape, or the look of the sky!—insignificant until they are put through some mental or emotional process and the true metal appears. The diamond looks like a pebble until it is cut. One goes to nature only for hints and half-truths. Her facts are crude until you have absorbed them or translated them. Then the ideal steals in and lends a charm in spite of one. It is not so much what we see as what the thing seen suggests. We all see about the same; to one it seems much, to another little. The artist, the poet, the essayist, do not get their picture, or poem, or sketch, from nature; they only get the seed-cone of it, which they plant in their minds and hearts, and from which the crop is grown. A fact that has passed through the mind of man, like lime or iron, that has passed through his blood, has some quality or property superadded or brought out that it did not possess before. You may go to the fields and the woods, and gather fruit that is ripe for the palate without any aid of yours, but you cannot do this in science or in art. Here truth must be disentangled and interpreted; must be made in the image of man. Hence all good observation is more or less a refining and transmuting process, and the secret is to know the crude material when you see it. I think of Wordsworth's lines:

“— the mighty world  
Of eye and ear, both what they half create, and what  
perceive;”

which is as true in the case of the naturalist as of the poet: both “half create” the world they describe. Darwin does something to his facts as well as Tennyson to his. Before a fact can become poetry, it must pass through the heart or the imagination of the poet; before it can become science, it must pass through the understanding of the scientist. Man can have but one interest in nature, namely to see himself reflected or interpreted there, and we quickly neglect both poet and philosopher who fail to satisfy, in some measure, this feeling.

*John Burroughs.*

