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APPLE BLOSSOMS

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BY

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TO

GEORGE HUNT

THE NESTOR OF RHODE ISLAND BOTANISTS

THE LOVED COMPANION OF MANY

YEARS

This Little Book

IS TENDERLY INSCRIBED

PREFACE.

In this little book the author has attempted to give some account of the wild flowers of Rhode Island. It has not been his purpose to write a flora of the State, but rather, in a familiar way, to call attention to the beauty of our indigenous plants, and to record some of their haunts.

Special localities of rare species are purposely omitted; knowledge of these merely leads to their extinction. It is doubtful whether it is even proper to mention their names.

Certain portions of the State are dwelt upon much more extendedly than others. This is due in part to the desire of the writer to meet the demand of summer residents in such places, and in part to his greater familiarity with these regions.

There is an extensive tract in the southwest part of the State and along the Connecticut border that is practically unknown. Exeter, Foster, Hopkinton, Burrillville, all require close examination.

It has been thought advisable to avoid, as far as possible, all technical terms and scientific names, relegating the last to the Appendix. There, will be found a list of plants mentioned in the text, with the common and botanic names as given in the last edition of "Gray's Manual."

For the notes on fungi the author is indebted to a friend.

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AMONG RHODE ISLAND WILD FLOWERS.

INTRODUCTION.

"I filled my pocket simply because they were bonnie."
— ROBERT DICK.

THE study of a limited area of country presents peculiar attractions. It is possible to compass it all. Thus, a collector may spend a delightful summer on Block Island, attempting by earnest and unremitting labor to discover and record every plant in this insular flora.

The same may be said of Conanicut, Prudence, Aquidneck, and other islands of Narragansett Bay. Even the islets abound in interest. Encamping upon one of them, the collector should lay out a scheme, and allow no plant to escape him.

Approached in the right spirit, even a single plant will afford matters for admiration or for lengthened study. In the sweet story of Picciola, we recall how a despairing prisoner was redeemed by a single plant. The small back-

yard of a city, even, may prove a most delightful wilderness. It may require several or many seasons to discover and record its living inhabitants. A French writer described a "tour around his garden," and the book is immortal. One can always make journeyings in his own yard which have all the charm of adventure and discovery. There are the plants that are put in, and those that intrude. Who are we, to decide which are worthless? There is the all-pervasive purslane, easy to eradicate, though possessing immense vitality; there is shepherd's-purse, — cosmopolitan wanderer; and plantain, "the white-man's foot." Besides these, there are knot-weeds, big and little; hollyhocks, in whose silken pavilions the bee takes his siesta; pink and white funnels of bindweed, the all-embracing balsam-apple, catch-fly pinks, four-o'clocks, burdocks, and ground ivy. In the season, too, the golden-rods and asters light up their stars.

These plants are engaged in an unsparing struggle for existence. Woe to the weakling, for he will be crowded out. Look at the combat between that bramble, armed as it is with sharp prickles, and that bindweed that embraces it like some constricting serpent. The fight seems to be about equal, but the bindweed conquers. So, again, the mandrake will possess the land by means of its aggressive root-

stocks, until its umbrellas are seen everywhere. Sunflowers, also, though annual, take care to scatter their seed — or invite the birds to aid them in so doing. For every seed these little fellows appropriate, they scatter forty. The result is that in the spring the yard becomes a nursery of baby sunflowers. Everywhere they spread their little hands. By and by they will rival Jack's beanstalk in height. Our neighbor's woodbine, a welcome interloper, tumbles over the fence, and with its prehensile tendrils lays hold of every point of vantage. It completely screens all unsightly fences, — for this was it ordained. Over the fence climbs that beautiful legume, the scarlet-runner, too poetic for a bean.

As intimated, it may require several seasons to explore, or at least to exhaust, even a small territory. Still, there is a definite end in view, and one which is attainable. This is not so when it is attempted to embrace the vegetation of a whole country or of the world. Even in the time of Linnæus it was shown how stupendous was such an effort.

In Rhode Island, where modesty is the rule, every one is convinced that any plant found within our limits, and therein native, is taller, more vigorous; if flowering, more beautiful; if fruit-producing, richer and rarer, than the same species in any neighboring State. The fact ad-

mits of no argument. Thus, State, county, or even village pride, may afford a certain stimulus to the observers' efforts.

As for Rhode Island, it may be regarded as a chosen land, especially favored by nature. In old geographies it was well styled, "the Eden of America." Even the markets recognize the superiority of its productions.

It will be answered that much of the State is sandy and bears a sorry contrast to the rich lands of the West. The prospect from the car windows is not always inviting, and the sterility of much of the soil must be conceded. But when one comes to consider the native plants, the story is far different. These despised species produce dividends not considered in the markets of the world. One's wealth need not consist of stocks, bullion, or real estate, useful as all these are. Such he takes not with him when he

"Draws the drapery of his couch about him,"

for that last, long rest; but it is pleasant to think that he may carry with him the knowledge of the beautiful and true. Why else should he be thrilled by art, music, poetry, or nature?

There are two definitions of the term Flora. It may mean the plants of a region viewed as a whole. Thus one speaks of the peculiar features of the South African flora, meaning thereby, of the plants there prevalent. Again, it may mean

a work wherein the plants of a region are described, as, for example, in Gray's Manual of the Northern United States, or in the Synoptical Flora.

Besides these there are local lists of great value, like that issued by the Torrey Botanical Club of New York, recording the plants in the vicinity of that city; or Prof. John Robinson's Catalogue of the Plants of Essex County, Mass., or Mr. Joseph Jackson's Worcester County Catalogue. Many such lists might be named. If well done, they furnish the basis of a thorough knowledge of the plants of a district. There is extreme variety in them as to method and execution. They are useful in the study of distribution, or in the compilation of more pretentious works. Sometimes they have a curious historic interest. For instance, there is Dr. John Torrey's Catalogue, published in 1819, of " The Plants Growing Spontaneously within Thirty Miles of the City of New York." It is needless to say it is now queer reading. Within a very few years the writer has gathered cardinal-flowers in a waste lot on Thayer Street in Providence. This shows that it is not too late, even now, to jot down notes of discovery. Take, as an example, the Cat Swamp region in Providence, still so prolific, but now rapidly yielding to vandal inroads. It would be a valuable service to catalogue what may still be found.

The great estuary, Narragansett Bay, extending far up into the State, and full of fertile islands, divides it into two unequal geographical sections, and has an undoubted influence upon the vegetation. This large body of water has the effect of ameliorating our climate. The cold northern oceanic currents are deflected at Cape Cod. Here we are sheltered from the icy eastern breezes, the bane of Boston. Any one who has tried bathing in the two waters, those of Massachusetts Bay, and our own, can testify to the difference of temperature. Only enthusiastic Bostonians, whose creed compels them, ever claim that the temperature of the Nahant waters is comfortable. It makes the stranger shiver as though he had attempted, without proper credentials, to enter Beacon Street society.

The naturalist will tell you that Cape Cod is the *ultima Thule* of many northern marine forms. They cannot live in the warm waters south of that promontory. In the same way the southern creatures are barred by the Cape.

Again, the many islands dotting the bay must materially affect the number and character of our plants. Unquestionably they influence the general temperature. They stand, too, in the very way of incursions, whether by southern currents, or by the artificial operations of commerce. Many plants undoubtedly have thus

been brought to our shores, either as accidental accompaniments of ballast, or in the form of seeds, adhering to bales of cotton or wool, or accidentally mingled with hay.

There are no more interesting plants than those of waste places or shores, such as filled-in districts, like the Cove-basin and the tract around the Wilkesbarre Coal Yards in Providence. Here one naturally sees strangers, in foreign garb and with strange manners, tropical strays and waifs, of which we have many examples. These may maintain themselves for a while and then disappear, or they may come to stay.

It is always a delightful occupation to pry around such spots, with the chance of finding something new, and, if new, then most precious. Many places about Providence, Newport, Bristol, and Pawtucket will bear further investigation for these Bohemians. Again, Westerly and Woonsocket, on the border of other States, are subject to incursions therefrom. These should be noted.

The amateur student of botany can materially aid the professional by keeping accurate notes of his finds, and better by retaining good pressed specimens to authenticate his statements.

Doctor Gray tells us, in his pleasant way, that plants have taken up modern customs — and travel by railway. Sometimes their advance is

leisurely — by freight train; again, it is rapid —by the express. In other words, the operations of commerce tend to spread plants from one region to another. They come as fruits or seeds attached to bales of wool or cotton; as accidental accompaniments of hay and other fodder plants; in ballast earth transferred in process of railway building; and even adherent to the clothing of man. For this purpose many of them, like beggar-ticks, burdock, cockle-bur, etc., have prehensile spines or hooks, to act as grapnels.

Some plants are saunterers or loiterers by the way, preferring to abide in one locality for a long time, ere a new advance. They may first send out skirmishers to prospect and report. If things seem favorable the whole army may move on. Their approach must be noted, but the birds of the air, or the breeze itself, may thwart us, and drop a seed in the night. Again, certain persons — as they have an undoubted right to do — may confuse one's study of the native plants, by introducing foreign ones into the woods. Thus about Quinsnickett Hill one must not regard every plant seen as indigenous.

Against such practice there is no defence, but it is of less frequent occurrence than one might expect.

A ballast heap or railway filling is only ex-

celled by the delightful ash-heaps of our cities. Blessings on the conservative wealthy who leave these odd corners to offend the public and educate the botanist!

Here we find the tall prince's feather cheek-by-jowl with aspiring sunflowers. Here golden-rods are tangled together with bindweeds and morning glories, hollyhocks pace like solemn sentinels, and portulacas and petunias; four o'clocks and evening primroses struggle with pig-weeds and amaranths. Do you disbelieve in the struggle for existence? Study Darwinism one summer on an ash heap!

I.

DISTRIBUTION OF PLANTS IN RHODE ISLAND.

THE following scheme will present some idea of plant distribution in Rhode Island: —

1. *True Saltwater Plants*; the sea-weeds or Algæ. — There is perhaps no better place in North America for collecting these, than on the rocks and in the tide pools at Newport, Narragansett Pier, Conanicut, Point Judith, and Sakonnet. They are fascinating in themselves, and, moreover, lead the collector to spots of exquisite beauty.[1]

It should be added, that persons who take up this study will find aid in the collections at Brown University, and direction from its working force.

[1] For any adequate study of our salt-water algæ one should resort to Prof. W. G. Farlow's "Marine Algæ of New England." Herein are detailed instructions as to the time and methods of collection. Every year a lot of "pretty" specimens are amassed by visitors at the shore. These often lack scientific value from want of essential parts. It is not enough to gather and mount all sea-weeds; one must secure the fruit — and the beginner is ignorant of its location. The late Col. S. T. Olney's "Algæ Rhodiaceæ" is our best local catalogue, but needs material revision.

In this connection — as they belong to the same great class — should be mentioned the fresh-water algæ. These abound in our brooks, inland rivers, lakes, and ponds. Those of the State are now beginning to be studied in a careful and systematic way, and already discoveries reward the investigator.

2 *Plants of the Estuaries.* — Narragansett Bay itself is a great estuary, or arm of the sea, but it is of smaller bodies of water, branches of the main bay, that we here speak. Examples of such plants would be the sea-wrack, the eel-grass, — so well known for its wonderful process of fertilization, — and the pond-weeds.

3. *Plants of the Salt Marshes.* — Salt marshes abound in the State. They are more or less subject to the influx of the tide, and hence contain brackish water. Among the plants found in such localities may be mentioned the sea-side crowfoot, the water plantain spearwort, the sand-spurrey, the glorious rose-mallow, various asters and *Gerardias*, the small *Sabbatia*, the arrow-grass, and many elegant grasses, such as the *Spartinas, Phragmites,* and *Panicums.* Here, too, would be found cat-tails, beloved of the æsthetic. We have two species, one with broad leaves, the other with smaller ones. In the latter the spikes are also small and delicate.

Not directly in the salt marshes, but in the same affiliation, one will find the Venus's look-

ing-glass and the camphor-weed. This plant is called also the "salt-marsh fleabane." It is a composite, like thoroughwort, in which the heads consist entirely of tubular flowers; these are of a pinkish color.

4. *Plants of the Seashore proper*, like the sea-rocket, a cruciferous plant, with pale lavender-colored flowers, followed by curious, jointed pods. The whole plant is fleshy, as shore plants are apt to be. It is due to their environment. Another instance would be the curious *Arenaria peploides*, L., a sort of fleshy chickweed. When it is out of flower it might easily be mistaken for a live-forever.

Other shore plants are the samphire, the sea-kale, or saltwort, the sea-blite, the spurge, and the sow-thistle.

Lately there has turned up on our shores a Kamchatkan wormwood, a pretty species, *Artemisia Stelleriana*, Bess. It has been found at Newport, Narragansett Pier, and Sakonnet. It has silvery leaves and yellow flowers. One is lucky if, in wandering along the shores, he does not feel the sharp prickles of the bur-grass, meanest of all its race.

The pimpernel, or "poor-man's weather-glass," may be included. Every one knows the pretty little brick-red — or occasionally blue — flowers this plant. It abounds on the cliffs at Newport. As it has the habit of closing with the

obscuration of the sun, Tennyson sings of it, "The pimpernel dozed on the lea." It is a plant of almost cosmopolitan distribution.

5. *Plants of the Fresh-water Ponds*, such as the pond-lily, the spatter-dock, the pickerel weed, with its showy spikes of blue flowers, and the arrow-head. Then there are the water plantain and numerous bladderworts, yellow or purple, the water primrose, the water lobelia, the pretty buck-bean, the golden club, the loose-strife, and the purple swamp loose-strife. Again, we might mention the water-shield, with its elliptical, peltate leaves and jelly-encased stems. This plant has a wide distribution over Asia, Africa, America, and Australasia.

6. *Plants of Rivers and Streams.* — In this section will be found many pond-weeds, the water-weed, and the arrow-arum. The last makes a fine show on some of our inland streams, like the Woonasquatucket. The arrow-shaped leaves are always handsome, and the flower is a long and narrow calla-like affair, the spathe having prettily crumpled edges. The water-weed is about the only weed which America has transferred as a nuisance to Europe. In England, where it was introduced as a curiosity, it has spread so as to impede navigation.

The flowers of many water plants are apt to be overlooked by beginners, and so they do not always detect the little floating-heart whose

leaves look like those of a minute pond-lily. It has white flowers, and is really a water gentian.

7. *Swamp or Bog Plants,* like the two species of sundew. These little plants are now well known as insectivorous — and they are always curious and interesting. They are cousins of the Venus's flytrap of North Carolina, a still more efficient fly-catcher. It would not be surprising if, near our eastern boundary, say in Little Compton or Tiverton, the red-flowered species, common in New Jersey, should yet be found. We have in the State so much that suggests the southern or pine-barren flora, that, remembering how plants preserve their affiliations and friendships, we are justified in certain expectations.

Of course we have the pitcher-plant in many places. In foliage and flower it is one of our handsomest plants. Like the sundew, but in a different way, it is insectivorous.

Again, everybody knows the dainty *Arethusa bulbosa*, that choice little orchid. It is now frequently sold on the city streets, and hence is likely to become rare. The fragrant *Pogonia* is much like it in appearance, but more delicate. It blooms somewhat later, as is also the case with another lovely orchid, the *Calopogon*. These three plants well illustrate the beauty, as well as the oddity, of the vast orchid family.

In the swamps grow the various cranberries,

the leather-leaf, various yellow flaxes, the two species of iris or flag-lily, and hundreds of interesting plants. Of these, many prefer a quaking bog, where one must proceed with caution lest he disappear.

8. *Meadow Plants*, such as meadow-beauty, hardhack, the dwarf laurel, or sheep laurel, the colic-root, the blue-eyed grass, the yellow-eyed grass, and many more. Here should be mentioned the true lilies, of which we have a glorious show along some of our railways. There are three species, the erect red, or Philadelphia lily, the nodding yellow, or Canadian lily, and the Turk's-cap. They bloom, too, in this order, with the periods of each somewhat overlapping.

9. *The Forest Plants*, which may be naturally classified into herbs, shrubs, and trees. It would be tedious to enumerate them. In the list one would find the white or swamp azalea, the pink azalea, the glorious rose-bay, the mountain laurel, the sweet pepper bush, with its pure white and fragrant blossoms, the flowering dogwood, shad-bush, anemones, columbine, saxifrage, violets, etc.

Hepatica, or liverwort, fairest of all our spring flowers, the Mayflower alone excepted, is rather local with us, but abundant where it occurs. The same may be said of bloodroot and dog-tooth-violet. The yellow lady-slipper is local, while the verticillate *Pogonia* is rare indeed.

Rue-anemone and perfoliate bell-wort have a restricted range, and the painted-trillium is infrequent, while the nodding one is common.

The sylva of the State is exceedingly rich, but the consideration of trees would, in this brief survey, lead us far afield. A list of them, however, will be given in the appendix.

Geological formation and environment largely determine plant distribution. Under environment we would bring certain subtle influences difficult to determine. But there is no effect without a cause. In a limestone region one looks for certain ferns; abroad there is a violet which is said to require zinc. We sometimes think plants evince a depraved taste for old tin cans, stove-pipes, domestic utensils, and hard-coal ashes. We have seen the cardinal-flower in cultivation, leave the garden bed and make broad its phylacteries in the gravelled path. Some plants appear to grow famously on next to nothing, as the junipers that cling to bowlders and cliffs in the Hudson Highlands. Often there is as little to glean about them as around the cabin of a Scotch crofter.

Can any one tell why the superb New England aster disdains to grow within five or six miles of Providence, but glorifies the Ocean Drive at Newport or the country roads in Cumberland? Why does Hepatica also fight shy of the city? Why should only one species of bell-

wort grow near town, while both are common at Diamond Hill quarry? Again, why do fringed-gentians fail almost altogether in certain years?

It would be a good notion to take an enlarged map of the State, colored for rock formations, and lay out thereon the grouping of the vegetation. Indeed, a pocket map of the county or town is always an excellent accompaniment of an expedition. Rhode Island may be easily put in the vest pocket of either botanist or politician. Many useful data may be noted upon it, perhaps for one's own guidance, perhaps for the better knowledge of the public.

II.

FAVORED SPOTS.

1. *Worden's Pond.*

> " Through tangled juniper, beds of reeds,
> Through many a fen where the serpent feeds,
> And man never trod before."
>
> — MOORE

It is a peculiarity of the flora of Rhode Island that we have an intrusion into it, notably in South Kingston, of a characteristic Southern or pine-barren flora. Plants occur which seem quite out of their range, which are not found again, indeed, until one comes to New Jersey, or at least the south shore of Long Island. How did they get here? This is an interesting problem.

The glacial theory supposes that at the time when ice covered New England and the Middle States, a peculiar boreal flora, finding the climate for the time congenial, descended with the ice. When the warm cycle returned and the ice was forced north, the plants, too, took up their retreat. Here and there, however, they were stranded on mountains or in high localities

which remained permanently arctic, and there we find them to this day. Their nearest congeners may be in Labrador or Greenland. Mt. Washington shows a number of such plants, and so do the slopes of Mt. Mansfield. Sometimes a peculiar insect fauna accompanies them.

Now, there may have been, under similar conditions — or, rather, reverse circumstances — incursions from the South. These plants in turn were driven out by increasing cold; but in spots still found shelter and protection, and have survived. In some such way only can we account for their scattered distribution — skirmishers as they are sometimes, far ahead of their proper army.

From this point of view, as well as from the intrinsic interest of the spot itself, no tract in the State is more interesting to visit than the great swamp of South Kingston and the "hill country" south of it. In this region is situated Worden's Pond, our Rhode Island botanical Mecca. This shallow lake, botanically explored some fifty years ago by Dr. George Thurber, Col. Stephen T. Olney, and by the writer's father, Prof. Jacob Whitman Bailey, is readily approached by carriage road from Peacedale, Wakefield, or Kingston. It is only a fair walk, too, from Kingston Junction, a walk in which one may find the two splendid fringed orange and white orchids. He will also pass through

noble groves of rose bay, or rhododendron, and the prickly holly. He will see, too, several other hollies. The Rhododendron is often twenty feet high. When this stately shrub is in flower it is a sight for gods and men. It absolutely arches over one's head, a spot

> " Where foiled Apollo glides,
> And bashful Daphne hides
> Safe in the shelter of her laurel tree."

The great swamp is said to be penetrable by a canoe in many directions. No doubt some new discoveries would reward the first explorer. My father is said to have exclaimed when he found the paint-root by Worden's Pond, " I would have as soon expected the palmetto!" It will be recalled by some readers that the paint-root is the plant quoted by Darwin as influencing the color of the swine at the South. Black pigs eat it with impunity, and survive; white pigs die; hence the prevalence of dark swine in that region.

The elegant *Sabbatia* grows abundantly at Worden's Pond, fringing the banks with its delicate pink stars.

> " A thousand saw I at a glance,
> Tossing their heads in airy dance."

Other plants found here are less showy, but of equal interest to the botanist, as the peltate

marsh-pennywort, a number of the minute bladderworts, the golden-club, the big yellow-eyed grass, and many curious sedges. Near the pond, too, grows that rare fern *Woodwardia angustifolia.* In September it may be seen abundantly fruiting. In the Kingston region occurs that fine St. John's-wort, *Hypericum adpressum,* and *Aster concolor.* It will be seen at once how many of these are pine-barren plants — and indeed, as far north as Pawtucket, where the yellow-topped aster prevails, we still find this type of vegetation. Take, for instance, the heath-like Hudsonia, which covers acres in Exeter, and the less common hoary Hudsonia, which prevails on the eastern side of the Bay. We would expect these in New Jersey; here they appear extra-regional. As for cat-tails, in the bog to the north of the swamp there are enough to beautify all the parlors in New England. Curiously dismal places are these cypress bogs! The trees seem to be born old. They are grizzled and bearded from infancy with the long lichen. He would be a venturous man who would undertake a short cut from the road. The bogs are impenetrable and profound.

It will not do to betray the localities of very rare plants; it would be treachery to the guild. Once, in writing of a plant for the *Swiss Cross*, we merely mentioned the character of the soil in its neighborhood, and spoke, as we

thought, most guardedly. A genial friend — led by Mephisto — followed that attenuate clue, found the plant, made our acquaintance in form, and laughed at our discomfiture. Henceforth the sphinx is not more incommunicative than we.

2. *Wallum Pond.*

" Bright gem, instinct with music."

The great diversity of the Rhode Island flora has been remarked upon. At Wallum Pond, in the northern part of the State, on the border of Massachusetts, is found a general hill flora, suggesting the borders of the White Hills and Wachusett. Such plants as the Clintonia and the painted Trillium here occur. For that matter, within our recollection, " the shy Linnæa " grew within our present city limits, and the Clintonia can still be found in East Providence. At Wallum the trees and shrubs also show a northern aspect. This charming lake is now easy of approach — and less attractive therefor — by means of the new Pascoag railway.

3. *Quinsnickett Hill.*

" Hills peep o'er hills." — POPE.

Of the botanical localities near Providence, none is better known than Quinsnickett Hill in

Lincoln. It has always been an objective point with collectors and lovers of the picturesque. It is near the famous Butterfly Factory, not so named because insects are there manufactured, but from the strange picture of a butterfly formed by two contiguous stones in the wall. There is here, or used to be, a quaint old bell, said to be from some Spanish convent. . . . One even now expects to hear the sweet notes of the Angelus.

Back of the mill grows a profusion of a rather brilliant western weed — a composite known as sneeze-weed. It was introduced in some way, perhaps attached to wool, but it is, or was, quite at home. At a distance one would take it for a garden Coreopsis; it is pretty enough for cultivation.

Quinsnickett would be for most persons a long walk from the city, but can now be readily reached by steam-cars to Lonsdale, or by electrics from Pawtucket. It is about two miles in a westerly direction from Lonsdale. The first mile is uninteresting, but after one strikes into the Lonsdale pike, marked by a splendid elm, the scenery becomes charming. On the side of the road is a pretty valley, in which flows the Moshassuck, here uncontaminated by the abominations that near the city render it pernicious. There is now and then a fall over a picturesque dam; then a little pool or lake,

reflecting the bright colors of leaf or flower. Along the road, if it be autumn, we begin to find the gorgeous New England aster. Here, too, are seen unusually fine specimens of the buttonwood tree or plane tree, the largest anywhere in our vicinity. Just above the factory the road separates, one branch continuing on towards Lime Rock, the other ascending the hill.

If one wishes to visit the favored ravine of Quinsnickett, he must turn off from this road into the woods, just above the bridge. He will pursue his path by a little stream, till it leads him to some rugged cliff. He makes his way between the rocks, and of a sudden there bursts upon him a scene of entrancing beauty: a lake lies like a gem among the hills, the wooded slope descending to the very brink. From the cliffs he may see gold-fish darting through the clear water. It was stocked many years ago by the owners, who took great pride, as well they might, in the natural charms of the spot. Even now one may find strange flowers, not indigenous to our region, growing here amidst the native flora, like the large-flowered Trillium and the rose-acacia. In the spring the borders of the stream which descends from the lake are gay with blood-roots, yellow violets, cohosh, and Trilliums. Ferns of many species, among them the delicate maiden-hair are common. At all

seasons the landscape is ravishing, but never more so than when autumn has tinted the leaves with crimson, gold, or claret. The place reminds one of the pools and lakes so common in the White Mountains. It is not difficult to fancy oneself transferred to a locality remote from settlements. Yet, by climbing the hills to the north, the visitor can see smiling villages, and the evidences of thrift and civilization.

4. *Diamond Hill.*

"Diamond me no diamonds." — TENNYSON

Another trip that we would suggest to the plant lover is the walk from Diamond Hill to Manville. Leaving the train at Diamond Hill Station, we stroll up the old tramway to the abandoned quarry. Here, in little damp depressions, can be found the sundew, while on the rocks above grows the lovely pale Corydalis, and in the woods near by the herbaceous honeysuckle. In the autumn, one here obtains splendid asters and golden-rods, a perfect wealth of color. The sumachs are also in full glory, and we notice afar the treacherous beauty of the poison dogwood. Just above the dam, which time begins to make picturesque, we strike into a thick jungle, where the frost grape shows its pendant clusters of fruit. The

berries have what Thoreau would call a "tang," very agreeable to the wayfarer. A half-hidden pathway leads through the bushes, in the open spaces of which we come upon glorious bunches of the ever lovely fringed gentian. There is a little spring halfway up the hill. A conspicuous feature in the scene is a wall of granite, lichen encrusted, and in spring gay with columbines. The ridge is quite low, perpendicular, and perhaps thirty feet in height. It is surmounted by a grove of oaks and other deciduous trees, among which the flowering dogwood is prominent. Near the spring, in rich, alluvial soil, we have found the tallest specimen we ever saw of the royal fern; it reached far above our heads, and was a thing of beauty.

The pathway conducts us back to the quarry, out upon a commanding position, from which we have a superb view of Diamond Hill plain and the peaceful region beyond. It is a characteristic New England prospect — the hill affording more than usual boldness to the foreground.

We now pass on for half a mile or more, through thick woods made up of mountain chestnut-oak, with splendid acorns; of black, red, and scarlet oaks, hickories, cornels, and chestnuts. Now and then there is a glade where we pause to rest. There are occasional houses off from the path, but at long intervals and of a rather forsaken character, but from the

people we have often met with kindly direction and cheer. Leaving this wooded district we come to a series of rolling hills and pretty meadows.

In one of these there is a spring, over which a large witch-hazel hangs out, in autumn, its weird, yellow blossoms. It is our habit to lunch at this spot. The impulse is upon us to tell of these joyous wayside repasts; the pleasant chats ; the quips ; the jokes ; the laughter and song. But we must hasten on. It does not do for the preacher, especially the lay brother, to diverge from the text, lest he fall into heterodox thickets of green-brier or schismatic intricacies of bramble.

We come at length to the heights above Sneach Pond, and look down with delight upon its placid waters. It is a rich region for collecting. Nowhere do pitcher-plants grow better. Near at hand, too, are fine localities for moonwort, pale Corydalis, rue-anemone, and perfoliate bellwort. Azaleas are beautiful in the woods, and columbines dance over the hills. Nowhere is the flowering dogwood more abundant. Its glorious white clusters give the effect of a blooming orchard.

The trip virtually ends with Cumberland Hill, where again one obtains a wide view of the Blackstone Valley. The return to the city can be made by train from Manville, or by walk-

ing down to Ashton or Albion by the railway, and then taking cars. Every step of the way is interesting.

5. *Blackstone Park.*

"Oh for a seat in some poetic nook
Just hid with trees and sparkling with a brook!"

A beautiful grotto by the Seekonk has long been known as Blackstone Park. It belongs to the city, and from its intrinsic merits is well adapted to its purpose. In its day, and that not so very long ago, the little valley was a lovely spot. It is still sacred with precious memories. One who knows all the intricacies of the little brook, its whims and caprices, is acquainted with a spirit as bright as an Undine or Princess Ilse. Why cannot we have a presiding genius of our haunts as well as the Germans? There is something about the Teutonic legends that lingers in memory like a perfume. In absence of any local traditions of our own, we often transplant the tales of the Harz or the Black Forest to our shores.

True wood lovers, as a rule, never offend by loud outcries and unseemly mirth. "'Tis merry, 'tis merry in good greenwood," sings that jolly outlaw, Robin Hood; but Robin was too much of a poet to make a noise, except in battle. One feels in this lovely ravine as if he were in a

BLACKSTONE PARK.

temple where all around is holy. Let us cast off our shoes.

There may be prettier streams than our little brook used to be; perhaps Mauritius shows nobler ferns; but the stream and its plants, to me, is classic; its valley is a Vale of Tempe. Here is a fine beech grove, and splendid chestnuts and maples. Here the spice-bush early puts forth its sweet-scented flowers. On the crown of the hill the laurel is glorious. Here are beds of ginseng, big Jack-in-the-pulpit, shadbush, and clethra. It has always been a favorite hunting ground.

A long list might be given of the herbaceous plants of this valley or grotto. In the early spring we find the anemone, and later the star-anemone, the cucumber-root, and various species of violets. In summer the thoroughworts grow to a fabulous size in the swampy ground, and the balsam hangs its jewels over the stream. In the autumn the copses break forth into myriad asters.

"Stars they are, and of a wondrous glory."

Golden-rods, too, especially of the pretty, interrupted sort *(Solidago cæsia, L.),* are abundant here. Under the beech trees one can find the curious parasitic beech-drops. The tall horsetail grows here. The place is a natural home of ferns and mosses.

Not only does the botanist love to linger here on summer days, the cool air and pleasant shade alluring him, but the entomologist here tarries for his quieter observations. As he sits beneath a tree, gorgeous butterflies float by him. He often secures some of the most elegant of the moths. Artists long ago discovered the beauty of the spot, and we have ere now seen them sketching the exquisite landscape. Within our own recollection, the portion of the valley west of Butler Avenue was still untamed. Magnificent trees arched over the brook, and there were little glades where one could totally forget the existence of houses. Now we possess nothing but an outline sketch, rude and unfinished, of what was once so lovely; this and a memory. Of the two, perhaps, the recollection is the more graphic — for the mind can restore form and color; can people the forests with their native inhabitants, and bring back the melody of the airy singers.

Wood lovers who dwell in cities have much to bear and forbear. There was a time when we were moved to indignant remonstrance at an act of vandalism. We could have fought for a tree as for our hearthstone. Now, in view of the inevitable encroachment of streets and houses, we are silent while the heart is aching. It is hard to see what Nature made so beautiful debased and ruined.

6. *Neutaconkanut Hill.*

West of our city — or rather of its suburb, Olneyville — lies the abrupt ridge known by the Indian name of Neutaconkanut. Few cities can boast a more commanding outlook. One is sometimes led to marvel why it has not long since been covered with beautiful mansions. It is now readily approached by the electric cars. Upon climbing it, one is confronted with an unsurpassed view of the city and upper bay.

The vegetation on and about the hill is rich. There are fine native trees and shrubs, the usual interesting herbage of a rocky region, and many lovely ferns. In the swamps and swales below the collector will find many choice specimens; and, extending his walk to the Cranston Print Works, will, in May or June, find all that he can do to gather in the flowers. Here, azaleas and lupines abound,— and as to violets, they robe the earth in azure.

7. *Plants of Warwick.*

" Come unto these yellow sands."

What are generally considered barren regions often present quite an interesting flora. This is notably true of the so-called desert regions of

the far West. But even here in Rhode Island we have districts that always call to mind the "blasted heath" in Macbeth. Between Buttonwoods and Apponaug is such a tract of land, — sandy, dry, and in many respects forbidding. The trailing blackberries, or "dewberries," grow here in profusion, large, luscious, and handsome. Fringing the woods are junipers or red cedars, often bearing their pretty berries. Scattered over the plain are abundant groups of wild indigo, in full flower. Its yellow must occupy in our landscape about the position of the gorse in Europe, or the "woad-wax" in Essex County, Mass. The wild indigo is the plant that we often see attached to the heads of horses just in from the country. There is a prevalent notion that it keeps off flies.

Small specimens of evening primrose are in bloom over the plains. These, also, have yellow flowers. Indeed, yellow appears to be Nature's favorite color on these wastes, and throughout the season there is always some one prevailing yellow plant. The succession would run somewhat thus: the wild indigo, the St. John's-wort, the sensitive plants, the yellow aster, the golden-rods.

Our attention is now attracted to some small pink or purple flowers, those of the milkwort (*Polygala polygama*, Walt.). The plants have certain other underground flowers also, more

fertile than the conspicuous ones, a habit held in common with some of the violets, certain grasses, etc. The golden-topped aster will just now be opening, and the pretty sensitive plants are extremely common. The foliage is as delicate and beautiful as that of a fern, and is slowly responsive to a touch or pressure. The smaller species is the more sensitive of the two. This leads us to remark that when one's attention is directed to the phenomenon of motion in plants, he will find it commoner than he supposes. Many of the Pulse Family change the position of their leaflets at night, as do sorrels, etc. Indeed, one who is familiar with the diurnal aspect of a garden will be surprised to visit the same at night and observe the altered condition of the foliage. Some leaves will droop, others fold in an erect position; some will point forward, others backward, and will look relaxed and sleepy. Indeed, their condition is known as sleep.

The common sumach may be seen here in flower, its great greenish-yellow panicles thronged with multitudinous insects, as minute diptera butterflies, bees, and wasps. One sees growing everywhere in the barrens, the tall white bush clovers. They are accompanied by narrow-leaved aster, very conspicuous in September from its lovely lavender-colored heads. The white-topped aster also occurs here, but

blooms much earlier. The beach-plum does not disdain these arid regions. Its fruit makes a luscious preserve.

We should not omit the wild carrot from the list of Warwick plants. It is throughout the State a lovely nuisance. It will be recognized at once by its broad umbels of pure white flowers, often with a single floret of a deep maroon color in the middle. These clusters as they ripen become depressed, until in the fruition condition there results a very pretty bird's nest. Very like fine lace are the flowers of the carrot. Is its root good to eat? Well, as a rule, avoid for such experiments all wild parsley plants. The parsnip itself is often dangerous. Moreover, all the genera have so great a family resemblance, that they may deceive the very elect. It would be a serious mistake to eat water hemlock under the impression that it was a garden vegetable.

We find on the Buttonwoods plains the smallest of the milk-weeds *(Asclepias verticillata,* L.). It is usually a foot or less in height, with narrow, whorled leaves, and an umbel of small flowers, succeeded by long pods. These contain, by and by, the well-known winged seeds of all milk-weeds.

The earls of our Rhode Island Warwick, if in our possible peerage there are ever such, will, we think, assume the cone-flower for their

floral emblem. It is certainly a knightly, if not regal, ornament. It abounds, too, throughout the Warwick region. Perhaps the less pedantic know it better by its common name of "cone-flower." It should never be called, as it often is, the "ox-eye daisy"; that name applies to the white-weed alone. Yellow daisy is a pretty fair name for it as popular titles go. But nomenclature aside, what a magnificent creation is this weed! The centre is a chocolate-colored cone, around which radiate the long strap-shaped, orange-colored marginal flowers. Occasionally they are large enough to be mistaken for sunflowers, and in structure are, if anything, finer. To us they always suggest something oriental, but, as a matter of fact, they are essentially Western.

One of the most splendid golden-rods in the State grows near Old Buttonwoods on the open plain, but there it is very common. The locality is very restricted. The heads are larger and fuller than in most of our species, and are disposed in a broad, flat corymb of intense yellow. It is a late-flowering kind.

In certain places the meadows are painted red with meadow-beauty or deer-grass. This little plant has an urn-shaped calyx, bronzy red. The stamens have long, yellow, odd-looking anther, hanging forward and opening by chinks at the apex. By pressure the pollen is

projected from these pores. The genus *Rhexia* is the sole representative of the vast tropical family *Melastomaceæ,* many species of which are characterized by large and gorgeous flowers.

The ragged orchis occurs in similar places, and in one spot the smaller loose-strife *(Lythrum alatum,* Pursh) has been found. It is here far out of its range, which, according to the books, is Western. Rhode Island is apt to exhibit these anomalies.

8. *Baker's Creek.*

" The many-knotted water-flags
That whistle stiff and dry about the marge."
— TENNYSON.

Between Aylsworth's and Old Buttonwoods, but nearer the former place, a little stream enters Cowesett Bay. It is known as Baker's Creek, although to one familiar with the Southern use of the term "creek," it is here misapplied. It is hardly more than a rivulet or "run." The tide flows into it for a long distance, hence the lower part has a tortuous course through salt marshes. It has cut a deep, meandering channel for itself through the mud and much of the swamp. The salt grasses and sedges, viewed from a distance, present a beautiful expanse of velvety green and delicate olive shades. The meadows on either side of the stream below

are quite broad. On the east side, the woods directly border them.

The trees are mostly oaks, chestnuts, sassafras, and sugar or "minny" berry (*Celtis occidentalis*). There are occasional red maples and clumps of sumach. The sassafras is very abundant and grows beyond its usual size, perhaps because undisturbed by root-diggers. The undergrowth consists of sweet pepper-bush, white azalea, rose, and blackberry tangles, with impenetrable masses of green-brier, hazel, and alders. In the spring, the slopes back of the brook are covered with violets and lupines, or fringed with *Smilacina*.

Passing up the little stream, when one finally gets beyond the limits of tide-water, he begins to find a great variety of grasses, sedges, and other herbaceous plants. Indeed, there is a peat-bog full of cranberry vines, always a good place to seek for orchids, sundews, pitcher-plants, and grass-of-Parnassus. All these, of course, according to the season.

The western slope of the valley is less wooded than the eastern, and is of milder character. Here and there a fine tree stands isolated, enticing one by its grateful shade to a half hour's repose. But the wanderer must know of the poison-ivy which, in this whole region, is ubiquitous. The best remedy, if affected, is chlorinated soda, applied as a wash.

Baker's Creek is a locality that can never be overestimated. It always offers a field for new exploration and adventure.

9. *Gorton's Pond.*

" The lake where drooped the willow."
— G. P. MORRIS

Near Apponaug is Gorton's Pond, which, in England, would be a lake and have its minstrel. In our country, such sheets of water are dwarfed by our frequent immense lakes, and hence are without note or fame,

The approach to this point is by dusty roads and long stretches of sandy plain. All the more is it enjoyed when attained. It is fringed in part by willows, under which one can sit, or upon which hang his harp. Tall, blue pickerel weeds, cousin of water hyacinth, now cultivated, stand with their feet in the water, and, just out of reach, the sweet pond-lilies tempt one to a swim. Pond-lilies on sale in the cities are lovely, but to see them in their glory, one must visit their native haunts.

The water of this pond seems especially pure and clean. It gives little indication of any pond-weeds, or other floating plants. On the sandy shores grow the golden Gratiolas, and the pipe-wort, with its queer white and mealy look-

ing heads. The button-ball is common, and thronged with butterflies,

The water is often too high for one to skirt the entire pond, but he can strike into the woods and scale the steep bank. Here the trees are mostly oaks, chestnuts, and the like. At the northwestern end of the pond is a peat-bog full of interesting plants.

But the real objective point to the plant lover is the southwestern end where the *Sabbatia* grows. Of all the July flowers this is the most exquisite. Sometimes the corolla is white, but oftener a beautiful pink, with a yellow ring near the centre. It is about two inches across. The observer who is alert to the utilities of nature, or to adaptive forms, will perceive that the stamens are not simultaneously functional. The arrangement is for cross-fertilization.

In this connection it may be said, that in the same swamp grows the purple loose-strife. In order to secure the much-desired end of a cross between distinct individuals of the same species, this plant presents three forms of flowers, all of which react upon each other; this by varying the relative lengths of styles and stamens.

The loose-strife, by the way, is a very handsome plant, not very common in our State, but abundant along the Hudson River. Sometimes we find it in old gardens.

10. *The Wild Flowers of Newport.*

> "My tardy steps the waves sometimes o'er-reach,
> Sometimes I pause to let them overflow."
>
> — THOREAU

While Newport presents no striking novelty in the way of wild flowers, its flora is interesting. Queer things may sometimes be picked up along the old wharves. Here, for instance, grows the wart-cress or swine-cress. One would hardly at first sight take it for one of the mustard family. It is nothing that would attract the casual observer.

In various parts of the city, as on the way to the beach, one often finds a quite uncommon introduced weed, the hairy willow-herb, a very pretty species. It is soft-hairy and with rose-purple flowers.

Back of the line of bathing-houses on Easton's beach there is, as every one knows, a salt marsh fringed with cat-tails. On the sandy drives between this and the sea we find many plants; a pretty vetch, the Venus's looking-glass, superb purple gerardias, the smaller evening primrose, and always the dainty pimpernel. The latter grows, too, everywhere along the cliffs. In the meadows that slope up from the sea, the daisies and clover run riot in June, and the bob-o'-links fill the air with music. Here, just above the tide line, in September, are seen great generous

tufts of marine golden-rod, one of the very handsomest species. It is everywhere on the ocean drive, accompanied in places by the glorious New England aster, and by other smaller and common species.

From Purgatory, where the wild roses grow halfway down the gorge, and the sea sings lullabies to the fledgling sparrows, the tourist passes along the cliffs to the second beach, and thence to the Berkeley rocks. These ranges; said to have been much loved by the good bishop, are indeed attractive in many ways. The geologist here finds curious revelations, the artist superb outlooks upon the ocean, and the botanist a number of interesting plants. The ranges run in parallel lines, with deep gorges, or narrow valleys between. Early in the season, the gray rocks are festooned with columbines. In their crevices, too, grow the pretty herb-robert. The great cow-parsnip presents its broad umbels of white flowers and immense leaves, and bindweeds and wild roses are everywhere. In a marsh near at hand, one sees at the proper season the lovely pink flowers of the rose hibiscus.

On Bailey's beach the garden "money" is quite established. The European loose-strife also grows along the roadsides.

What a delight it is to wander near these shores, soothed always by the monotone of the

sea! One experiences something between sadness and exhilaration. It is always so within the sound of the ocean.

One is impressed anywhere upon the island of Newport with the infrequency of native trees. It is traditional that there were once many — but there are few places now where there is a grove. Trees, however, when protected in youth from the winds, appear to do well, and there are many fine ones about the houses.

11. *Wild Flowers of Little Compton*

" If you would seek a beautiful peninsula,
Look around you! "

The flora of Sakonnet and vicinity is rich and varied. Here are found the usual beach-plants, such as the marine golden-rod, the kale, and the samphire. Here, also in the swamps around "Marsh-island," grows the rose-hibiscus. On the sandy bluffs and the meadow above, the pimpernel is abundant. There are frequent dense copses of bayberry, sumach, and other shrubs, and wild roses are everywhere. Then, as one rides eastward, he passes for miles through superb forests of deciduous trees — oaks, chestnuts, birches, beeches, and the like. The prickly holly is very common, and grows to a good-sized tree. We have seen it best in

the grove dedicated to Awershonks. Here, by a charming brook, that winds through the woods, is a large bowlder on which is inscribed the name of the Indian queen. There is no more beautiful spot in the State. One may spend a whole day in those woods — and see no human being. The cardinal-flowers range themselves in long lines by the stream. Indeed, Sakonnet is the chosen home of the cardinals. Everywhere, along roadsides, they are seen rank and luxuriant.

Near the "centre" we have picked up on the roadsides the "false dragon-head," not very often seen hereabouts outside of gardens. We have also seen in Sakonnet that pretty Asian worm-wood, now progressing around the world, the *Artemisia Stelleriana,* Bess. It has silvery leaves.

Climbing high over trees and shrubbery, is the "climbing hemp-weed" with opposite, heart shaped, petioled leaves, and flesh-colored flowers. It is a composite, and hence something of a surprise to one who knows only their usual habit. The swine-cress is found here even more commonly than in Newport. In August the sweet pepper bush scents the very air.

The fresh or brackish ponds about Sakonnet possess a very rich flora, embracing pond-lilies, pickerel-weeds, the eel-grass, the umbellate penny-wort, swamp buttercups, swamp loose-

strife. The marsh islands yield the false Solomon's seal. All rocky cliffs, or detached ridges, — and there are many such, — show abundant growth of the polypody fern.

Tiverton and Little Compton both demand close and patient exploration. Casual excursions have yielded excellent results, and some rare plants. Two or three summers should be given to the work.

12. *Wild Flowers of Block Island.*

"Oh, it's a snug little island!
A right little, tight little island!"

— DIBDIN.

It is always a delightful task to botanize an island: one does not, as on a continent, feel appalled by the vast extent of the field. To compass it seems a mere matter of unremitting labor.

Block Island, lying between Newport and Long Island, quite out at sea, is a great terminal moraine. Upon it there is no rock *in situ;* that is to say, no cliff or ledge. The whole island is composed of a multitudinous mass of bowlders, pebbles, sand, and clay. Of the bowlders, many are erratic from a long distance. They are of various formation and size. Along the beach, black, magnetic sand is common; viewed from a height, the island

looks like a petrified sea. It presents, too, a most surprising undulating surface, and every valley, or even small depression, holds a pond or bog. Indeed, no feature of the island is more pronounced than these bog- or pot-holes, always rank with vegetation. From the south shore very wonderful cliffs arise to a great height, but these are not rock, but clay. Here one can view a natural section denuded of superincumbent earth, for the action of the weather has exposed the whole formation.

The clay of this bluff is of a pale slate color. Over this is a loose deposit of bowlders and pebbles; over these again, loam. The cliffs, if they can be so called, have weathered into fanciful shapes; minarets, towers, pinnacles, are piled at random—

> "Huge as the tower that builders vain,
> Presumptuous piled on Shinar's plain."

Often a huge bowlder has lost its bedding, and been hurled into the abyss. Again, one will be noticed poised too perilously near the brink; it is a mere question of time when it falls. On the most prominent bluff of all stands the southeast lighthouse, one of the most important on our coast. The sea slowly but surely encroaches upon the land.

No shore can be more changeable than this. On one day the beach is firm, hard sand; the

next, a mass of rattling pebbles. One can barely realize that it is the same place.

The numerous ponds and bog-holes present perennial fascination. They are full of the largest and finest pond-lilies, among which there is an occasional pink one. The prevailing shrub in such places is the button-bush. In smaller quantities grow the Carolina rose and sweet-pepper bush. Willows are by no means common, and, strange to say, there are no alders. Trees of any sort are extremely scarce, though it would appear from excavations that they once prevailed, and were of good size. Indeed, tradition says as much. A few small tupeloes, a group of viburnums, and clumps of bayberry (not nearly so common as on the adjacent mainland) are the nearest approach to arborescent growth. There is no sign anywhere of a pine, juniper, or cypress, except where such have been introduced. The common sweet fern is not seen at all.

On the whole, the flora is, considering the situation, rich. In July and August, 1892, two hundred and ninety-four (294) species of plants were identified, leaving the plants of spring and autumn yet to be determined. Moreover, the northern end of the island has not been as yet thoroughly explored.

The region might well be mapped out into districts, as of the bogs, the many fresh ponds,

the Great Salt Pond, the meadows, the cliffs, and the shore. One might include another province, the Algæ, which, however, from the changeable nature of the shore, are not so abundant as in many places along our coasts. Still, fine specimens of sea-wrack and devil's-aprons may be found, and the more delicate forms are often washed up by the sea.

Near the beach, of course, the pimpernel is found. Here, too, are the sea-rocket, the curious sand-wort *(Arenaria peploides),* sow-thistle, kale, and maritime golden-rod. Seven species of golden-rod, in all, have been seen on the island, of which the lance-leaved is the most frequent. Indeed, it is the commonest weed, covering whole pastures and fringing the roadsides.

There is the usual host of introduced weeds, of which the wild carrot is preeminently first. The white-weed, or ox-eye daisy, is a good second. There are four species of thistle, of which the Canadian is well to the front.

Two plants new to Rhode Island have been found in this remote place, — a pond-weed, the *Potomogeton pulcher,* and a huckleberry, the *Gaylussacia dumosa, var. hirtella.* There are seven ferns at least, among them the rare chain-fern. Strangely enough, there is no true brake. Another curious thing is that not a single liliaceous plant has so far been dis-

covered. One might naturally expect the false Solomon's seals at least.

Indeed, it is strange to note the absence of some of the very commonest plants of the neighboring coast. There are no lupines or sensitive-plants, no hibiscus or sabbatia; no true geranium. The Virginian creeper may be called rare, but poison-ivy is far too abundant. Poison dogwood or swamp sumach has not been seen at all, though conditions seem so favorable for it. Among the clovers is the now common *Trifolium hybidum,* the pretty pink and white species seen of late throughout New England.

No member of the saxifrage family has thus far been found. One would expect at least the grass-of-Parnassus. Among *Compositæ* are the camphor-weed and chicory. As a rule, the last is rather local in Rhode Island, and does not make itself at home as around Cambridge and Boston. With its large, deep blue heads, it is a most beautiful weed.

The Great Salt Pond, at the north end of the island, is a most attractive collecting-ground. After some weeks of exploration one always gravitates towards this beautiful sheet of water. Here there is always a delightful breeze and excellent botanizing.

How came some of the plants on this little island? Are they in some cases the descendants of old continental forms, existing while the

land was continuous with the continent? Or did birds, winds, tide-currents, or the operations of man, introduce them? Of course seeds follow commerce; but how about the endemic species? The problem has yet to be studied.

13. *Exeter.*

Exeter is a town of varied and beautiful scenery. It is dotted with ponds and traversed by large and rapid brooks. There are hills and vales and meadow lands.

A botanical friend of ours used to speak of going "down south." For a long time we supposed that he was off for a trip to Florida; but Rhode Island has a Dixie of its own. To that austral land was he going. Indeed, it is possible, even in this State, to live a good deal like a hermit, — "remote and unfriended."

Pine Hill, Exeter, is one of the regions remote from railways and electrics. Here one may seek solitude and secure it. Primitive woods are here, — under which, perhaps, the Narragansett once roamed. The timber is heavy and the underbrush dense. Upland, the dry plains are covered with the heath-like Hudsonia and the bear-berry. The woods are rich and prolific in wild flowers. Here is found superb spikes of purple fringed orchis.

A good way to approach Pine Hill is from Washington. The road, leads mainly through a level country, in the woods of which abound the trailing arbutus and the lady-slipper. This whole region requires careful exploration. Especially should the region about Escoheag Hill and the Connecticut border be searched. New plants are apt to be there discovered.

14. *The Seekonk and Blackstone.*

Perhaps we are prejudiced in thinking our Seekonk "better than all the rivers of Israel." If so, it is not from ignorance; for we have seen various rivers in divers climes, and pitched our tents, so to speak, by the St. John, the Amonoosuc, the Hudson, the Sacramento, the Truckee, and the Humboldt. We have seen the beautiful valley of the Connecticut and the willowy banks of the Delaware, and, as their antipodes, the tortuous Chargres, gay with birds and flowers. When we describe the Seekonk, then, as being lovely, we know whereof we speak. Along it there is a succession of charming views. A hillside, dotted with oaks, chestnuts, and hickories, will slope back gradually from an amphitheatre of green salt marsh. The boles of the trees are gray, the foliage light and delicate with the varied greens of spring. Dark

evergreens are interspersed, and frequent masses of snow-white dogwood enliven the scene.

As every one knows, the Blackstone, below Pawtucket, changes name, and in view of the salt water becomes the Seekonk. The so-called river road winds down from Red Bridge to the bank of the river, which, when in repair, it threads as far as Blackstone Park or beyond. Indeed, the old road extended nearly to the grounds of the Butler Hospital. There its course is stopped by a sort of estuary, bordered by salt marshes, which on summer days were covered with satiny sheen. Through the tall weeds and grasses meanders a little stream, which, further inland, forms the chief attraction of the Grotto. This is naturally the most beautiful spot in the city limits, and, fortunately, is private property. In it grow the yellow violets, nodding Trilliums, dwarf ginseng, Solomon's seals, Indian cucumber-root, Jacks-in-the-pulpit, and ferns galore.

From the river road mysterious pathways lead up the hill, and vanish in the woods. They are overhung with silvery-stemmed birches, whose foliage flickers above and makes the "chequered shade" of the poets. Certain views remind one strongly of Doré's pictures, of those especially dreamy scenes from the "Idylls of the King," When the hickories are glowing with autumnal gold, and the birches, too, are yellow, and be-

yond them is seen the peaceful, hazy sky of October, he would not feel surprised if some "gentle knight came pricking" down the hill. However, Roger Williams is the only real link that links these shores with even the later mediæval time.

There was a time within our memory when both shores were beautiful. High banks were clothed with feathery pine; the mountain laurel here luxuriated; fields of lupine made the hillsides blue, and pink azalea nodded over the pathway. Here, in spring, come troops of children for the Mayflowers. Even now some tufts of laurel survive, and saxifrage struggles into bloom. Violets still enliven the pathway, and in autumn the hillsides troop with azure violets. By the river bank grow the maritime golden-rod, the beach pea, and the marsh lavender.

15. *The Pawtuxet.*

Surely no fairer river flows through our New England valleys. It is a stream like a poet's fancy, wandering here and there in scenes of beauty. We love to follow its ins and outs, even though its surprising meanderings cause us to double on our way. At times we come to a broad, grassy meadow, white with innocents, which have drifted like snow into its

undulations; then we climb a bank, over which the columbines tremble. Here we discover the Solomon's seal, the wild sarsaparilla, and the false lily-of-the-valley. Saxifrages and violets abound.

The Pawtuxet is the home of the pink azalea. One sees whole hillsides covered with its rosy blossoms. They peep out from copses and groves. In flower masses this plant is only equalled by the mountain laurel.

While Boston and Cambridge have their Charles, we can well be proud of our Pawtuxet. Wandering along its banks, we always fall a-thinking of King Arthur or of Robin Hood. The good old English ballads, known and loved from childhood, arise once more, and we walk along to a verse of Sir Patrick Spens or Sir Cauline. Indeed, we often expect some knightly adventure with paynim or red-cross knight. Pawtuxet possesses some of the qualities of Lethe; beside it one may forget his cares. No one, surely, will deny that it is lovely, from its source to its mouth. To see it in its maiden beauty and innocence, one must go up into Scituate, and go in September. The year is then ripening. Every hedge and copse and meadow is aglow with blossom. Golden-rods display themselves along the roadsides, now in plumes, now in feathery masses. Asters, that is, *stars*, shine out everywhere. The box

gentian, with its rich, metallic blue, and the fringed gentian, delicate and pure, entice one from the carriage. Here, too, are the rose-purple bells of Gerardia, the sweet lady's-tresses, and the white turtle-head and blue monkey-flower.

Lonely roads wind in and out of the forest, now journeying into unexpected valleys, now climbing sudden ascents, from the ridges of which one gazes on a long horizon line of neglected duties.

What extraordinary aspects the clouds take in this blue heaven of September! One could almost imagine some spirit exercising his caprice upon them, as they are now massed in billowy masses, or scattered in little tufts of down, or ranged in mountain peaks.

It may be that our woods are not old, but in places the forest, such. as it is, stretches off to the remotest distance unbroken by town or hamlet. At another point, the observer catches a glimpse of peaceful villages, and perhaps hears together what the old poet thought so happy a combination, — the sound of brook and Sabbath bell. There is always something inspiring about a summit from which one gazes into a valley. It is something the feeling with which youth looks out upon untried manhood, beyond those hills! That is the ever-recurring question.

16. *North Scituate.*

A very interesting region to the botanist is that just about the village of North Scituate. Moswansicut Lake is itself a gem. There are some very wild nooks in the vicinity. In one place is found the climbing or Hartford fern; in another, the orange-fringed and the white-fringed orchis. The purple orchis is not uncommon, and cardinal-flowers abound. The meadows are radiant with the corn-flowers in the season; by the walk are ranks of hardhack and meadow-sweet; lovely yellow and purple Gerardias are frequent, and there is button-bush, clethra, and clematis. In Forster some of our early explorers found quite a number of rare things. I never visited it but once, when I passed along the State border, but in that one trip found some very elegant specimens. The neighboring Connecticut town of Sterling contains much unbroken forest, so we can well expect incursions over our line.

III.

EARLY SPRING FLOWERS.

WHO is there who after the long winter does not love to wander in the woods? The very sounds of reawakening life are joyous; the "peep" of the hyla, the cheery notes of the bluebird — and afar off the boastful crow of chanticleer. Fresh odors are in the air; even the earth smells good. One longs to sit upon a bank, and, while sunning himself, to hold sweet converse with the nymphs and dryads. The first insects lazily try their wings, and a butterfly passes like a shadow.

Of flowers proper there are, as yet, none, unless, perhaps, we are fortunate enough to find the trailing arbutus, New England's special favorite. It peeps from beneath the brown leaves of the oak, or the needles of the pine. Hepatica, too, the blue-eyed, the laughing, may glance at us from some sequestered nook. It is the happiest of all our flowers; smiling always.

Maybe we may find the little Virginia saxifrage, having a rosette of green leaves, from

which arises a hairy stem, bearing a cluster of white flowers. In garden paths we will see the whitlow-grass, one of the cress family, with flat, elliptical pods. It blooms — and even goes to seed — in March. It is a tiny European weed, here quite naturalized.

Instead of true flowers we find many odd forms of bloom, unornamented by floral envelopes, and arranged in tassels or spikes. They have the essentials, however, the stamens and pistils. Perhaps these will be in different flowers, or even on different trees. A flower may have colored envelopes, or it may not; they are not necessary at all tunes to its function. Sometimes they serve to attract insects, and, as a rule, they are protecting parts, more or less showy, and soon falling or withering away after the fertilization of the ovary. In such plants as the willows, alders, hazels, and birches, the insects or the winds carry the pollen to its destination. We find all gradations, from flowers that have both floral envelopes to those that have only one, or neither.

If we stroll along the brook or river side in early April, we will find drooping over the water the tassels of the alder. They hang three or four in a cluster, — the very perfection of grace — being all of unequal lengths. If we touch them, they shower us with gold. The long catkins

bear the stamens; but near them are a group of upright, spike-like clusters, rather ruddy in appearance. These are the pistillate flowers, or those that are to bear the seed. We will often notice their dried husks long after the perfection of the fruit, and, indeed, till the advent of the new leaves and flowers. Catkins usually fall off in one piece after flowering. All children know and love these russet "tags" — the sure indications of the returning spring. They are formed the previous summer, and remain exposed all winter. If taken into the house, they can be coaxed into blossom long before the usual time. It is always pleasant to thus anticipate nature; the catkins are so suggestive of gurgling streams and the green woods of summer!

Near the alders, and often actually growing with them, we will find the silky catkins of the willows. Children call them indiscriminately "pussies," but they are by no means all of a kind. They are a puzzle even to the botanist. The catkins do not droop as do those of the alder, but with them they form an elegant bouquet, the brown and gold of the tassels harmonizing charmingly with the silvery gleam of the "pussies." The latter, besides the pure, pearly white, often have shades of purple, salmon-color, and neutral tint. They are very beautiful when the yellow stamens, tipped

with ruby, first protrude from amidst the silky hairs.

A great many trees and shrubs, especially those that "tempt the winds of March," blossom in catkins. Besides the willows and alders, the birches and poplars have tassels. The long golden ones of the white birch are especially lovely — the "tresses of a dryad." The sweet-fern, too, tassels out early. The balm-of-Gilead will bloom in the house if one gathers the large, sweet-smelling buds, and puts the stems in tepid water.

It is with tassels that Nature opens the year. She loves to border her streams with them; to hang them from lofty trees; to place them trembling on the wayside shrub. They are her ideal of loveliness. In looking at alder or birch in full tassel, we cannot wonder that the Greeks endowed their trees with human attributes. To us, even, there is something personal. It is in their favor, too, that children love them.

Real blossoms are almost ready to appear; indeed, we find the skunk-cabbage in full perfection. They project their heads from the ground like half-buried capuchins, or weird cobolds of German story. The most eccentric fancy could hardly call their odor pleasant. The spathes themselves have a wild sort of beauty. They are prettily blotched with red

and yellow. It requires infinite courage for them thus to spring up amidst snow and ice.

There is no floral demarcation between the later months of spring, nor is the distinction ever arbitrary. Some of the flowers of April continue into May, while others bloom within a few weeks and go to seed. The wood-anemone is an early April flower. The blushing buds may be found peering from amidst the bronzy involucral leaves. These later assume a vivid green color.

Violets come about the same time, blue, white, and more locally, yellow. Our State boasts many species of this lovely genus. The choicest of all is the "bird-foot," growing in sandy soil, as on railway banks, with light blue flowers, the petals beardless, and the leaves deeply divided; hence the name. A variety sometimes occurs, where two of the petals are darker and almost velvety. It is as handsome as a pansy.

We have three white violets, mainly distinguished by their leaves; they are all pretty. The earliest violet of all is the upland arrow-leaved violet, but this is soon followed by the leafy-stemmed dog-violet and the multifarious varieties of the common swamp blue.

Together with the arrow-leaved violet may be found the cinque-foil or five-finger, with pretty yellow, strawberry-like blossoms. The inno-

IN MOSHASSUCK VALLEY

cents, too, now gather in little groups, more and more closely together, till the meadows are whitened with them. The salver-form corolla is often blue or lavender at the edges, and has a yellowish eye. These charming little plants are a perennial joy.

In damp places one will discover, if his eyes are sharp, the "little speedwell's darling blue." Underneath the shrubbery, bordering the swamp, the wood-betony is common. It has two varieties as to color — the deep dark reddish and the yellow. They are specifically the same. The leaves of this plant are as delicate nearly as those of a fern.

The great heath family is represented in early spring by many vase-formed or urn-shaped flowers. Of these we may mention the leather-leaf, in the swamps, the blue and whortle-berries, and cranberries. The upland cranberry has very pretty pink flowers. It covers the lower part of the State.

Rhodora is very local with us. There used to be a locality within the limits of the city of Providence; perhaps more than one. Now the seeker has to go much further for it. This is the plant of which Emerson sings that —

" Beauty is its own excuse for being."

Everybody knows the pretty service-berry or shad-bush with its pure white flowers rather

preceding the leaves; the graceful columbine with its honey-bearing horns; the choke-berry; the Solomon's seal and the bell-worts. Not every one knows so well the dainty *Arethusa* — that precious orchid. For that matter, all orchids seem precious and superior.

A thing to be remembered is one's first sight of a meadow carpeted with painted cup and golden groundsel. It is oriental in its magnificence.

So we might proceed to chronicle the various spring flowers except that, like Hosea Biglow, we "hate the cat'log style." A new list of names is wearisome; a technical description formidable, and in these random notes we desire rather to point out the pleasant paths, than to walk far thereon.

To learn how abundant are our vernal treasures one should endeavor to chronicle and preserve what he finds. In the early months they tumble upon us in tumultuous throngs. It is almost impossible to keep up with them, but who that has ever collected in April or May will forget his first tentative gleanings, and the joy of that out-of-door life?

IV.

AUTUMN.

OUR people are blessed in that they can so easily escape from city or town, from gas and sewage smells, to the pure air of the country.

In twenty minutes from the city one reaches the fragrance of sweet fern and bayberry; he changes the clang of coal carts and the insistent electric bell to the cry of the bluejay or the caw of the crow. Some lingering warbler, too, may still carol his song. These late songs are, in their effect, stillness. They are even soothing. Then there is the drowsy whir of the cicada, and the crisp rattle of the grasshopper. If one sits down near a group of asters, he is lulled by the murmur of multitudinous bees.

The trees have assumed their rich autumnal coloring. The sumach is especially brilliant. The long, pinnate leaves are dyed of vivid crimson, shading off into a copper tint, or even green. The leaflets look like drooping banners, such as, in cathedrals, hang over the monuments of sleeping heroes. The hickory trees wear a very warm, delicious yellow.

One feels bathed in the hue as he stands beneath a tree. And then, how sweet they are if we crush the leaves in our hands! What a rich, nutty odor exhales from them! Did the dryad of the ash ever do wrong in those mythic times of old? She is always mourning; in the spring with her sombre buds, in the autumn with darkened foliage. The cornels, too, have a deep, glossless red; but in the case of the large-flowered cornel, or dogwood, the bright scarlet berries relieve the tint of the foliage. The plant is then as elegant as when in flower.

Some of the oaks show glorious wine colors. Wine of Burgundy is theirs, sparkling, ruby colored. One speeds across a meadow to learn, what it is that makes such a show. Coming to the bough, we find the colors are not so very vivid after all; the transmitted sunlight gives them their glory. But look at their shapes; Nature has plied her scissors to make the most fantastic patterns.

As to the maples, who can sing their praise?

> I seek not the gold that shines
> In the depths of Western mines,
> For the sugar maples hold
> In their hands a purer gold;
> In coin I wade knee-deep, —
> All mine, if I care to keep,
> And a shower of ducats fall
> At my very lightest call.

Who says that the wealth I own
Is surpassed by a glittering stone?
He feels not the mellow glow
Of these trembling leaves, I know,
Nor can he, by wildest guess
Conceive what I possess!

It is utterly impossible to foresee what vagary of painting the sugar maples may exhibit. Sometimes the body of the leaf is green and the border red; again, there is a yellow border and crimson ground; or we may have the whole leaf of one uniform shade, or mottled with several hues. These trees are the glory of our forest, and fitly chosen as the State tree. When a recent shower has varnished the leaves, they are translucent. Art cannot imitate them, or reproduce, or, for that matter, even preserve them for any lengthened time. There is the difference between death and life.

The huckleberry bushes, that are later to afford the brighter colors of the declining year, are now reddening. Of flowers there are still many: asters, golden-rods, lady's-tresses, gentians, polygala, belated cardinals, white lettuces, and hawkweeds. Often one is delighted to find spring flowers reappearing. Violets often do so. Sometimes we find the buck-bean in full glory; also strawberry flowers. One of the latest things to linger is the

butter-and-eggs. It may be found often in November. In the hedgerow is an occasional spike of meadow-sweet. Peppergrass, chickweed, bouncing-bet, and self-heal still hold their own. The fall dandelion lights its stars in the meadows. Last of all, the witch-hazel hangs out in the copses its bizarre flowers, yellow, spider-like.

V.

WEEDS OF THE STATE.

There is no intrinsic difference between a weed and any other plant: —

" A weed is nought but a flower in disguise,
Which is seen through at once if love give a man eyes."

What, then, it may be asked, constitutes a weed?

It has been well defined as a plant which persists in growing where it is not wanted. Its persistence is one of its inherent and essential qualities.

It will thus be seen that the weediness of a plant depends very much on the observer's point of view. What to one person may be worthy of all admiration and care, may be to another a pestilent nuisance, for which the hoe and the fire are the only remedies.

Still, there are a vast number of plants upon which every one agrees to bestow the opprobrious epithet " weed." No one for a moment hesitates about a pig-weed, the amaranths, purslane, beggar-ticks, or mouse-ear chickweed. As an

admirer of the beautiful, he might be led astray by the charms of the white-weed, the cone-flower, chicory, and butter-and-eggs.

The term "weed" has for an agriculturist a perfectly definite meaning. It means that the special plant to which the name may be applied springs up and thrives to the exclusion of better things. Like sin, it must be perpetually combated.

It is a curious fact that most of our weeds have a European origin. Indeed, many of them grow here more vigorously than in the Old World, their native home. Like the white race, they have come to possess and multiply. The weaker native herbage is often crowded out by them.

Some weeds are troublesome simply because of their unsightliness. Such like to intrude upon the streets, as does the cockle-bur in Providence, or the great cotton-thistle, in itself a superb plant. Burdock, plantains, and beggar-ticks, again, are instances of such intrusive weeds. They give an unthrifty look to any street or yard.

Two of the most prevalent weeds of our State are also two of our most beautiful wild flowers. These are the carrot and the white-weed, or ox-eye daisy. They cover whole meadows, and frequently the islands of the bay — the one with its exquisite lace-like umbels,

the other with its pure "marguerites." Fortunately, while careful husbandry will reduce them, there are always enough left to gratify the plant-lover. So is it also with that superb composite — the cone-flower. It is a veritable weed, but how could we dispense with its glorious blossoms?

In some places the Canada-thistle is a terrible nuisance. There is not a word to be said in its defence. We have long feared, too, that the viper's-bugloss or blue-weed might spread from East Providence and other localities, but there is no general complaint of it.

Weeds are active enemies, not to be despised so much as hated. They are cut down or uprooted wherever found. So great a pest are they that man has taken them for a type of rank, rapid, and useless growth. Yet, when, curiosity leads us to observe them, we find beauty even in the meanest.

> " The meanest flower that blows can give
> Thoughts that do often lie too deep for tears."

We might, indeed, learn a useful lesson from their aggressiveness; their determination to overcome all obstacles. The delicacy of taste, too, that leads not a few to seek the richest soils or the sunniest exposures, is worthy of our praise. Poor they may be, but they like to dine at the rich man's table.

Again, how social they are in their habits, forever seeking companionship,— though it be in battle! They take such enjoyment, too, at times, frolicking over the meadows, coquetting with their own images in the brook, or climbing "where the air is delicate," upon the eaves of our houses.

Many of them, were they only less common, would be highly prized. Indeed, it is at times difficult to draw the line between them and the aristocracy of the garden. Think what the dandelion would be were we not accustomed to its golden disk and feathery globes! Look, too, at the luxuriant growth of the cotton-thistle, with its silvery, crinkled leaves and regal tufts of crimson. Truly it says, "no one touches *me* with impunity."

The common burdock, too, is hardly to be despised, notwithstanding its rank appearance. What else could so gracefully occupy the nooks and corners of an old yard? The artists have found it out, and love to represent the generous curves of its leaves. The corn-cockle and the fleabanes are beautiful; the latter look like etherealized asters. Their only fault — and that is sufficient to condemn them — is that they are intruders.

Our waste places would be deserts indeed did not kind nature interpose to clothe them with these humble plants. We say humble,

but not a few of them are of proud affiliation, and are vagrants merely from choice.

It is a useful rule never to pass a weed. If it is a stranger, make its acquaintance; if it is a friend, then welcome it. Be certain that its virtues are not all recorded. If its beauty is not superficial, it is sure to reveal itself to a lens. If the flowers are not showy, the seeds or fruits are often curious, or the leaves of wondrous pattern. Representing, too, most diverse families of plants, the study of these forms refreshes one's general knowledge.

What is troublesome in one place may not be at all so in another. One family of plants will illustrate this. It is the Parsley Family. In this State we find its prominent genus is the carrot. Its hooked or bristly fruits cause it to be universally disseminated on the mainland and the islands. Now, if we go inland, — say to Princeton, Mass., — we find it replaced by the related caraway. Again, in Lebanon Springs, N. Y., neither of these are common, but parsnip is everywhere.

It is often difficult to account for the wide or limited distribution of a plant. We naturally expect those provided with pappus, or coma, to be widely spread. But then there is the whiteweed, that has no pappus, more common even than the thistle, which is so provided. Vigorous constitution and adaptability go a long ways.

Plants provided with running root-stocks, too, are well equipped for an advance. In many ways man, animals, and birds are made to help in colonization. A weed never loses an opportunity.

A list of our weeds would include a great number of families and genera. This is not the place to enumerate them, or to discuss their eradication. We would refer the reader to "American Weeds and Useful Plants," by William Darlington; to an article on the "Pertinacity and Predominance of Weeds," by Asa Gray, in Volume II. of his Scientific Papers; and to several articles by Professor Byron D. Halsted, Professor William H. Brewer, and F. Lamson Scribner, now issued in pamphlet form; also to the volumes of "Garden and Forest" and the "American Agriculturist."

In considering weeds one is often impressed with their inconsistencies and perverse unexpectedness. Why should a plant, for instance, that naturally likes good, rich loam, persist in taking to the gravel path? Why, when all chances seem favorable for independent life, should others enter into vindictive competition for an over-stocked field? Such are some of the interesting questions that weeds present. A flower garden is lovely; but for vital, everyday, continual interest a weed-grown yard is far-and-away more fascinating.

VI.

GRASSES AND SEDGES.

" The murmur that springs
From the growing of grass."

— POE.

THE earliest as well as the latest sign of vegetable life is, perhaps, afforded by the grasses. Their green blades form the sward which we all so much admire. How much we miss it in the far West and South!

These grasses often have flowers as beautiful, when known, as their more pretentious neighbors. All are aware that the tasselled head and silky plumes of the Indian corn or maize are lovely, and gaze with delight upon the sea of rye or barley rippled by gentle breezes, — or thrown into mimic billows by the more wrathful. Take a hand-lens, and note how exquisite are their individual parts.

Both the Grass and the Sedge Family are so large, and the species so varied, that their study becomes a specialty. Some men devote their whole lives to arranging, systematizing, and describing them. The sedge family comes first in order. It includes besides, true sedges, the

galingales, the cotton-grasses, the bulrushes, and many less familiar plants. All these resemble grasses in some particulars, and are often popularly confounded with them. They differ, however, in essentials. The greater part of them have solid stems, in the true sedges often triangular in section, while the leaves form a closed sheath about the stem. The flowers are in spikes, possess no calyx or corolla, and have three stamens. The stem leaves are three-ranked. The first, in true sedges inclosed in a more or less close fitting bag, may be triangular or otherwise.

Sedges may be regarded as weeds in every sense of the term. The famous nut-grass of the South — from some sub-tropical climate, now rapidly spreading — is one of them. It is the *Cyperus rotundus* of science. It has small potato-like tubers, which greatly aid its undesirable distribution.

Unlike grasses, sedges are quite devoid of nutritive properties, are coarse or wiry, and avoided by grazing animals. As a rule they prefer marshy ground. With the exception of their occasional use in basket-making, or for chair-bottoms, or bedding for cattle, they have scarcely any economic value. The papyrus of the Nile, from which paper and boats were made, is a famous exception to their general uselessness.

Let us now consider the grasses. Put them side by side with the sedges, and compare them. It will be seen that they, unlike the sedges, have *hollow* stems (as a rule), swollen and closed at the joints. They have two-ranked leaves, having many fine, parallel veins, and split sheaths. Just where the leaf joins the stem, or, rather, at the top of the sheath, a little transparent appendage, called the *ligule*, often stands. The flowers are in spikelets, very variously arranged, from a loose panicle, like red-top, or pampas-grass, to the dense, cannon-sponge-like spike of Timothy. Some are armed with long bristles, straight or twisted. The stamens vary from one to three ; the styles are usually two — very rarely three — and are prettily feathered.

In common with sedges, grasses have fibrous roots. The description of the flowers would be too technical for this place. One can refer to the excellent volumes issued by the late Dr. Vasey from the Agricultural Department, and to Gray's Manual, for their study. These books contain illustrations.

There is no family more dreaded by the beginner — and many whose chance duty it is to teach botany avoid them altogether. It is a good test for one's love of science if he persistently engages grasses.

The family contains three thousand or more species, widely distributed over the earth. They

approach the poles, and are found high up on mountains. In the tropics some become arboreous — we can easily gain an idea of their appearance from our own stately reed-grass.

It is superfluous, perhaps, to speak of the value of the grass family to man. It is enough to say that it yields all our cereal grains, most of the forage plants, the inestimable sugar-cane, sorghum, and bamboo with its myriad uses. In countries where the latter grows, it would seem as if the life of the people were bound up with it. Houses, boats, water-pipes, mats, utensils, weapons, are all made from it. It is a plant of universal application.

No injurious properties are absolutely known to inhere in the family, though darnel has an evil reputation.

Of our common grasses, many are beautiful. There is the wild rice, as seen on the upper cove lands in Providence. To see it at its best one must paddle a canoe on some high northern river. The flowers are large for a grass, and beautifully marked with bright bands of red. The panics are especially lovely, both in the fields, or in the vase at home. Old witch-grass often seems to cover a field with purple vapor; the drop-seed, in an early autumn morning, with dew upon it, looks like a diamond-studded veil.

VII.

OUR FERNS.

" Royal ferns adorn each watery nook."

THESE bewitching plants have very various habits. Some like to wave their broad plumes in the swamps, where, under the Midas-touch of autumn, they are transmuted to purest gold. Some dip their point-lace in the brooks, or fringe the roaring cataract ; while still others wander into the woods and meadows, or nestle under walls.

We love best the graceful species that grow by the woodland streams — or in pastures, the hay-fern, with its exquisite outline and pleasing fragrance, the lady-fern, with its broad and showy fronds, and, apart from these, on rocky hillsides, the rigid and glossy Christmas-fern. The last is sometimes called the evergreen fern — and, indeed, is verdant in midwinter; but as other ferns have the same habit, the name is not sufficiently distinctive. One will know it by its thick texture, its simply pinnate fronds, and leaflets with a little ear or auricle at the base,

on the upper side. It is much used by florists. There is a variety of it much more deeply cut.

In autumn many ferns become tinted with rich shades of yellow or umber, while others bleach pure white. Nothing can be fairer than these etherealized forms. What can be said of the maiden-hair, that fern-poem? A popular impression is that it is uncommon. It is by no means so in Rhode Island, though not often seen near the city. We have but one species of maiden-hair, at once known by its polished ebony stems and light, graceful spray. Other ferns have the dark polished stems — as, for instance, several spleenworts; but they are not maiden-hairs.

One of our most beautiful ferns is the Virginia moonwort. In May or early June, as one is searching for wild flowers in some rich, dark wood, he will stumble quite unexpectedly upon this lovely fern, so un-fernlike in appearance. It makes an elegant pressed specimen.

Including varieties, one might say that in round numbers we have forty different ferns in the State. Of these, some are extremely common, and others rare. A list is here appended.

Polypodium vulgare, L. ; common polypody.
Adiantum pedatum, L. ; maiden-hair.
Pteris aquilina, L. ; brake or bracken.
Pellæa gracilis, Hook ; cliff-brake.
Woodwardia Virginica, Smith ; chain-fern.

Woodwardia angustifolia, Smith ; chain-fern.
Asplenium Trichomanes, L.
Asplenium ebeneum, Ait. ; ebony-fern.
Asplenium thelypteroides, Michx.
Asplenium Felix-fœmina, Bernh. ; lady-fern.
Camptosorus rhizophyllus, Link. ; walking-fern.
Phegopteris polypodioides, Fée ; beech-fern.
Phegopteris hexagonoptera, Fée ; beech-fern.
Phegopteris Dryopteris, Fée ; ternate beech-fern.
Aspidium Thelypteris, Swartz ; shield-fern.
Aspidium Novaboracense, Swartz.
Aspidium spinulosum, Swartz.
Aspidium spinulosum, var. intermedium, D. C. Eaton.
Aspidium spinulosum, var. dilatatum, Hook.
Aspidium Boottii, Tuckerman.
Aspidium cristatum, Swartz.
Aspidium marginale, Swartz.
Aspidium acrostichoides ; Christmas-fern.
Cystopteris bulbifera, Bernh. ; bladder-fern.
Cystopteris fragilis, Bernh. ; bladder-fern.
Onoclea sensibilis, L. ; sensitive-fern.
Onoclea Struthiopteris, Hoffman ; ostrich-fern.
Woodsia Ilvensis, R. Brown.
Woodsia obtusa, Torr.
Dicksonia pilosiuscula, Willd.
Lygodium palmatum, Swartz ; climbing fern.
Osmunda regalis, L. ; flowering fern.
Osmunda Claytoniana, L. ; interrupted osmunda.
Osmunda cinnamomea, L. ; cinnamon-fern.
Botrychium ternatum, Swartz ; moonwort.
Botrychium, ternatum var. lunarioides.
Botrychium, ternatum var. obliquum.
Botrychium, ternatum var. dissectum.
Botrychium Virginianum, Swartz.
Ophioglossum vulgatum, L.

MOSSES.

" Damp mosses, cool and sweet,
Allured our waiting feet."

— Mrs. Akers Allen.

There is in nature nothing brighter than the mosses and lichens. Whether from their intrinsic verdure, we cannot say. We accept in thankful spirit these green oases of the winter desert. There is something especially alluring about them; the velvety sheen entices one as well as the fresh clean, earthy odor. A birch tree may stand on a carpet that a king might envy. Some trees, decrepit with age, wrap their feet about with costly rugs of moss. They admire oriental ease, these old-time fellows, and what could be softer, cooler, more luxurious, than these billowy cushions?

As we walk through the woods, brown with the wrecks of former seasons, where the hazel catkins and tassels of alder alone give promise of returning life, it is with an exulting feeling that we come to a bed of moss. Here, in miniature, stand the trees of the forest, — pines and ferns, and the grace of deciduous woods, are all imitated. Nor are the mosses content to copy the natural forms about them. We find in their capsules, most astonishing likenesses to helmets, lances, and other mediæval weapons or armor. The colors are extremely varied, pass-

ing through all gradations of green, to a sort of white, as in *Leucobryum* or some of the peat-mosses *(Sphayna).*

Our moss flora will bear further study. The Rhode Island list is certainly not complete. The bark of living and dead trees, walls and rocks, sand and earth, — yes, even running water, — yield their particular species. The study requires a compound microscope as well as a dissector. Good directions for collecting and identification were given in the " Observer," 1894, by Mrs. Elizabeth G. Britton of New York. One needs, besides, Lesquereux and James's " Mosses of North America."

Where the mosses abandon the scale of colors, the lichens take it up. Although usually of a gray appearance, or of a greenish yellow, there are some that are a vivid yellow or even orange color. One will sometimes note a stone wall that looks like a sort of palette upon which Nature tries her brushes. Upon it will be seen a strange confusion of lines, resolving themselves into a wild harmony. The pigments are not yet ready for the painting of a cardinal-flower. It is with a few faint, tremulous touches of color that the artist first begins. She works up through anemones, violets, and columbines, to the full splendor of the summer, or the glory of the autumn. Often she writes in hieroglyphics upon the bark of the trees,

stories more ancient and more mysterious than those of Nineveh. It is perhaps well enough to know that Nebuchadnezzar declared war in such and such a long-forgotten year, but what would we not give to decipher the legends of an earlier period, engraved in these perennial characters! For lichens antedated the advent of man or animal, and were gray upon the rocks when time itself was young. They preceded even the coal-making ferns. Both mosses and lichens, as well as the beautiful weeds of the sea, can retrace their history almost to the dawn of time.

Even now they will endure when all else perishes. Upon the deserts of New Mexico or the Sahara they are found ; in the desolate island of Kerguelen in the far south, or as far north as the stars and stripes have gone. Even at the top of Mt. Blanc, or higher yet, upon the Himalaya, they dwell upon the borders of the snow. Everywhere they are the last vegetation met with.

We are apt to despise these humble beginnings of life, but they have their uses in the scheme. Take a fresh surface of rock as it comes from the quarry, and leave it exposed a few years to the weather. Upon it we will begin to see spots of lichen like fossil tear-drops. The little plants will begin to disintegrate the mineral, some soil will be found, and then mosses will spring up.

Lichens, being epiphytic, only require a foothold; their sustenance is derived from the air. By their decay more plants are accumulated, and those of higher orders can now find a home. They aid in the dissolution of rocks. The various mineral salts are swept by rains into the alluvial bottoms, and thus the land, impoverished by continual production, is re-enriched by the drainage from the hills.

They are silent laborers, these hosts in green and gray, but they well perform their task. Was it not Old Mortality, that, with a sublime love of the unknown dead, used, with his chisel to renew the churchyard inscriptions? The lichens are envious of our human records; they will in time obliterate the proudest epitaph. There is something tender and pathetic in the way they do it. The legend that inscribes our brief life-history, be it true or false, they tone down with loving lines. They cluster around the names of our dear ones as fondly as our memories.

VIII.

SEA-WEEDS

" With its waving blade of green,
The sea-flag streams through the silent water,
And the crimson leaf of the dulse is seen
To blush like a banner bathed in slaughter."

No division of the vegetable kingdom has attracted more deserved attention than the sea-weeds. Throughout the world they have found their earnest admirers. It is not alone for their intrinsic beauty that they are loved. Their collection involves the visiting of romantic cliffs, of shores strewn with the flotsam and jetsam of ocean, of caves and hollows, and even of the deep sea itself. The pursuit is always fascinating — and sometimes even perilous. A spice of danger does not deter the heroic algologist. "Like one who gathers samphire, fearful trade," he hangs suspended from the crags, or ventures at low tide upon the slippery rocks, over which the spray is dashing. He may delay too long upon the beach, and, in his scramble from the advancing tide, find no Edie Ochiltree to assist him.

There need not, however, be danger in the study. Many ladies have been successful gatherers of algæ, and in the albums of many a "summer girl" may be seen choice specimens, self-collected. The plants need not be studied at all, if one simply prefers to collect them; but it is always pleasanter to know something of the habits, uses, and even names, of the objects which one treasures. Rhode Island ladies should excel in this charming study, for in the waters of our bay may be found a great variety of species. A sail to any of the shore resorts, and especially to Newport, Conanicut, Narragansett Pier, or Sakonnet, will repay any lover of sea-mosses. They are especially prevalent after a gale, when the angry sea throws up upon the beach many a ribbon or tress of fairy beauty, which in calm weather might be sought in vain. No great preparation is necessary, nor any extended outfit. Full directions are given in Professor W. G. Farlow's "Marine Algæ of New England." This, also, is the best book by which to study them.

IX.

FUNGI.

BY A FRIEND.

"Vagrant plants of parasitic breed." — HOOD.

UNDER the head of fungi are included all those plants which do not possess chlorophyll (the green coloring-matter of plants), and in which no such parts as stems and leaves can be distinguished. They are not able to live upon air and water, like the plants which possess green coloring-matter, but take their nourishment from animals and plants, whether alive or dead, and in process of decay. In some cases the host plant does not appear to be especially injured by the presence of the fungus. In lichens, which are fungi parasitic on certain algæ imbedded in them, the alga, which acts as the host, carries on its processes of growth and reproduction in normal fashion, notwithstanding the fact that it supplies nourishment to the parasitic fungus.

The toadstools are a very large and important group of fungi, including all the fleshy fungi with a stalk and an umbrella-shaped top. They

are sure of attracting attention, on account of their beauty of form and color and their great abundance. They are especially to be met with in moist woods, though some prefer the open fields. Many of them are good eating, while many others are very poisonous. In popular language, the former are called "mushrooms," and the latter "toadstools." Botanically speaking, they are all toadstools, whether poisonous or edible.

Only a few of the edible kinds can be mentioned here. The field mushroom which grows in meadows is the commonest. It is much cultivated for the market. The horse mushroom, which is often mistaken for it, is somewhat larger and grows in similar situations.

The horse-tail mushroom, which is also very common, is easily recognized by its cap, which is not expanded like that of the field mushroom, but remains closed, and when seen from the side has an oval outline; it is covered with white, shaggy scales. When the fungus begins to decay, it turns to an inky fluid.

The parasol mushroom is much taller than the field mushroom, being raised on a long, rather slender stalk. The cap is peculiar in having a raised projection in the centre; it is covered with rather large scales. Just below the cap is a loose ring which may be slid up and down upon the stalk.

Very different in appearance is the chauterelle, which is of a beautiful egg-yellow color. The gills or plates on the under side of the flattened cap are much shorter and more blunt than in the other species which have been mentioned.

The beefsteak fungus differs from the forms just referred to in growing on the trunks of trees, from which it projects like a bracket. It also differs in bearing on the under side of the cap a large number of very small tubes. When cooked it looks very much like a beefsteak; whence its name.

Leaving the toadstools, we come to the puffballs, nearly all of which are edible, and to the Morel, which is one of the best of edible fungi, and is not easily mistaken for poisonous species. It occurs in May and June.

To distinguish edible from poisonous toadstools is often very difficult, even for an expert. Various rules for this purpose are given in different books on the subject, but the novice who attempts to follow them is very apt to go astray from carelessness or lack of experience.

Colored plates, which often seem, to promise an easy solution of the difficulty, are in many cases untrustworthy and misleading. The selection of edible fungi requires great care and accurate knowledge gained directly from specimens, and should not be attempted by inexperienced persons.

Another very interesting group of fungi is that of the rusts. Many of these have the peculiarity of spending their lives partly on one plant, and partly on another, and often widely different one. Thus the common rust of wheat appears in the summer and fall upon the wheat and other members of the grass family, but when the spores germinate in the spring they do so only on the leaves of the barberry. After completing a part of its life cycle on the barberry, it passes the next stage on the wheat, and in the following spring the process is again repeated. Long before this fact was discovered by botanists, the farmers noticed that their wheat was especially affected with rust in the neighborhood of barberry bushes, and as early as 1755 the barberry law of Massachusetts was passed, compelling owners of land to extirpate the plant.

The smuts, of which the corn-smut is an example, are peculiar in attacking only the flowers of the host plant, to which they do great damage. The whole fungus becomes eventually a mass of spores.

The ergot of rye forms dark purple spindle-shaped masses about an inch in length in the spikes of ripening rye. It falls off, and in the following spring gives rise to the spores which again infect the rye-plant. Where grain containing ergot is ground up into flour, the latter

is often very poisonous. A near relative of the ergot, the black knot, does considerable damage to cherry trees.

To the lowest groups of fungi belong the potato-rot, which damages potatoes ; the fish-moulds, which attack fish, and at times greatly injure the salmon industry ; the true moulds, so common on jellies, etc. ; and the yeasts, whose growing commercial importance has led to the institution of splendidly equipped laboratories devoted to their study alone.

THE BOTANIST

LIST OF RHODE ISLAND TREES.

A hard and fast line cannot be drawn between shrubs and trees. Hence this list is somewhat arbitrary. The intention is to include plants of undoubted arboreous character. A few of those mentioned are tentatively admitted, and it may be some few are excluded that should find mention.

The Tulip Tree (*Liriodendron Tulipifera,* L.). One of the most stately and beautiful of our native trees, known at once by its peculiar four-lobed, glossy leaves, and large orange and green, magnolia-like flowers.

American Linden, Basswood (*Tilia Americana,* L.). A larger and finer tree than the much-cultivated *Tilia Europea.* Its leaves are far bigger and cleaner.

Staghorn Sumach (*Rhus Typhina,* L.). Rather a tall shrub than a tree. Known by the feeling of the branchlets as of a deer's horn when in the velvet. It forms copses.

Common or Smooth Sumach (*Rhus glabra,* L.). In habit like the last, but often quite tree-like. Well known for its pinnate foliage, which in autumn becomes a brilliant red; also for its pompon-like, acid berries.

Copal or Dwarf Sumach (*Rhus copallina,* L.). The glossy pinnate leaves have a winged rhachis.

Poison Sumach, Poison Dogwood (*Rhus venenata,* D.C.). Common in swamps. A little tree with smooth gray bark, long, glossy, pinnate leaves, with entire margins, and yellowish-gray berries. Always to be avoided.

Striped Maple (*Acer Pennsylvanicum, L.*). In the northern part of the State. It has large, handsome leaves, and a pendant raceme of greenish flowers.

Mountain Maple (*Acer spicatum,* Lam.). In localities with the last. A true mountain species. Flower clusters erect.

Sugar Maple, Rock Maple (*Acer saccharinum,* Wang.). Also the variety *nigrum.* Familiar as the source of maple sugar, and for the glory of its autumnal coloring. A valuable shade tree. Flower clusters delicate and pendant.

Red or Swamp Maple (*Acer rubrum,* L.). At its best a very fine tree. Highly ornamental in the early spring for its red clustered flowers, and in autumn for its ruddy foliage.

Silver-leaf Maple (*Acer dasycarpum,* Ehrb.). Frequently seen in cultivation. One of the very earliest harbingers of spring. Often blossoming in late February or early March. Flower clusters less ruddy than the last. Leaves deeply and sharply cleft and white beneath. Exfoliating bark.

Box Elder, Ash-leaved Maple (*Negundo aceroides,* Moench.). I have never seen it in this State when I was sure it was indigenous.

Common Locust (*Robinia Pseudacacia, L.).* Originally introduced, but forming groves and thickets everywhere. A tall and showy tree, with pinnate leaves and white, drooping clusters of pea-like flowers.

Clammy Locust (*Robinia viscosa,* Vent.). Sparsely escaped around old gardens.

Bristly Locust or Rose Acacia (*Robinia hispida,* L.). A very pretty little tree, with delicate pink pea-flowers. In the woods about Quinsnickett Hill and elsewhere.

Wild Yellow or Red Plum (*Prunus Americana,* Marshall).

Beach Plum (*Prunus maritima,* Wang.). Abundantly flowering before the advent of the leaves. Showy. Fruit delicious as a preserve,

Wild Red Cherry (*Prunus Pennsylvanica,* L.).

Choke Cherry (*Prunus Virginiana,* L.).

Wild Black Cherry (*Prunes serotina,* Ehrb.).

Mountain Ash (*Pyres Americana, L.).* In northern part of State.

Shadbush, Service-berry (*Amelanchier Canadensis,* L.). There are three well-marked varieties of this pretty tree. The white flowers are showy, and the fruit palatable.

Witch-hazel *(Hamamelis Virginiana,* L.). Very common along water-courses.

Flowering Dogwood or Cornel *(Cornus florida,*L.). One of the most beautiful of our trees. The true flowers are small and greenish, but are surrounded by four white bracts or bud-scales, usually mistaken for petals. Berries red and showy. Rocky hillsides in woods.

Sour Gum Tree, Tupelo (*Nyssa multiflora,* Wang.). Conspicuous for its divaricate branching and glossy leaves. These take on vivid autumnal tints.

Prickly or American Holly (*Ilex opaca,* Ait.). Almost as handsome as the European, and like it used at Christmas. Especially common in South Kingston and Little Compton.

Black Alder, Winter Berry (*Ilex verticillata,* Gray). Has deciduous leaves; hence the abundant scarlet berries are conspicuous in early winter.

Holly (*Ilex lævigata* Gray).

Smooth Holly (*Ilex glabra,* Gray).

White Ash (*Fraxinus Americana,* L.).

Red Ash (*Fraxinus pubescens,* Lam.).

Black Ash (*Fraxinus sambucifolia,* Lam.).

Green Ash (*Fraxinus viridis,* Michx.).

Sassafras *(Sassafras officinale,* Nees.). When allowed it will become a good-sized tree. We have some giant examples in the State.

Spice Bush, Fever Bush (*Lindera Benzoin,* Meissner). Has minute yellow flowers preceding the leaves in spring. Stems and leaves aromatic,

Slippery Elm (*Ulmus fulva,* Michx.).

American Elm *(Ulmus Americana,* L.*).*

Minny Berry, Sugar Berry, Hack Berry (*Celtis occidentalis,* L.*).*

Plane Tree, Buttonwood, Sycamore *(Platanus occidentalis,* L.*).* "Our largest tree, often 90 to 130 feet high, and 6 to 14 feet in diameter."

Butternut *(Juglans cinerea,* L.*).*

Black Walnut *(Juglans nigra,* L.,*).* Personally I have never seen it an assured native. Apponaug and elsewhere.

Shagbark, Shellbark Hickory *(Carya alba,* Nutt.). Known to everybody for its delicious nuts.

Mocker Nut, White-heart Hickory *(Carya tomentosa,* Nutt.).

Big Shellbark *(Carya sulcata,* Nutt.).

Pig-nut or Brown Hickory *(Carya porcina,* Nutt.).

Bitter-nut or Swamp Hickory *(Carya amara,* Nutt.).

White Oak *(Quercus alba).* A superb tree, of which we have many fine examples.

Post Oak, Iron Oak *(Quercus stellata,* Wang.),

Swamp White Oak *(Quercus bicolor,* Willd.).

Chestnut Oak *(Quercus Prinus,* L.*).* Its variety is the mountain chestnut oak, common on Diamond Hill and elsewhere.

Scrub Oak *(Quercus ilicifolia,* Wang.). Superabundant in wide districts.

Scarlet Oak *(Quercus coccinea,* Wang.). The variety *tinctoria,* Gray, is the *Quercitron,* yellow-barked or black oak. Gray oak is the variety *ambigua,* Gray.

Swamp, Spanish, or Pin Oak *(Quercus palustris,* Du Roi).
Chestnut *(Castanea sativa,* Mill., Var. *Americana,* Michx.). At its best one of our largest trees, of imposing aspect at all seasons.
Beech *(Fagus ferruginea,* Ait.). Too beautiful and well known to need special mention. Its smooth, mottled bark is tempting as a place of record.
Hazel-nut, Filbert *(Corylus Americana,* Nutt.). A shrub rather common.
Beaked Hazel *(Corylus rostrata,* Ait.).
Hop Hornbeam, Ironwood *(Ostrya Virginiana,* Willd.). Conspicuous for its hop-like flowers; also for the strong and sinewy-looking stems.
Horn-beam, Ironwood, Blue or Water Beech *(Carpinus Caroliniana,* Walter).
Cherry Birch, Sweet or Black Birch *(Betula lenta,* L.*).*
Yellow Birch *(Betula lutea,* Michx.).
American White Birch, Gray Birch *(Betula populifolia,* Ait.). Frequent.
River or Red Birch *(Betula nigra,* L.*).*
Speckled Alder (*Alnus incana,* Willd.*).*
Smooth Alder (*Alms serrulata,* Willd.).
Aspen (Populus *tremuloides,* Michx.).
Large-toothed Aspen (*Populus grandidentata,* Michx.).
Cottonwood (*Populus monilifera,* Ait.).
White Poplar (*Populus alba, L.).* Cultivated, but found in a measure spontaneous about old places.
Black Willow *(Salix nigra,* Marshall).
Shining Willow *(Salix lucida,* Muhl.).
Glaucous Willow *(Salix discolor,* Muhl.).
Silky Willow *(Salix sericea,* Marshall).
Heart-leaved Willow *(Salix cordata,* Muhl.).

These are our commonest willows, and some of these are rather shrubs than trees. Various cultivated willows, including the weeping willow *(Salix Babylonica,* Town.), are common.

White Pine (*Pinus Strobus,* L.*).* Our noblest species. Five leaves in the fascicle. A very valuable timber. Tree 75 or 160 feet in height.

Pitch Pine (*Pinus rigida* Miller). Very common, especially near the coast. Leaves in threes. Thirty to eighty feet high.

Red Pine (Pinus *resinosa,* Ait.). "A tall tree with reddish, smooth bark and hard wood, not very resinous." Cones terminal. Leaves in twos or threes.

Black Spruce *(Picea nigra,* Link.).

Hemlock *(Tsuga Canadensis,* Carr). Fine groves of this beautiful *conifer* occur. Small, scattered leaves, glossy above, whitened beneath, small cones pendulous.

White Cedar, Cypress *(Chamæcyparis sphæroidea,* Spach.). Abundant in swamps all over the State. Often mistaken for arbor vitæ.

Common Juniper (*Juniperus communis* L.).

Red Cedar, Savin (*Juniperus Virginiana,* L.*).*

Creeping Juniper *(Juniperus Salina,* L.*).* Forming extensive and dense circular patches in sandy places and borders of swamps.

INDEX OF PLANTS.

Topographical Atlas

OF THE

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

By the United States Geological Survey, in co-operation with the State

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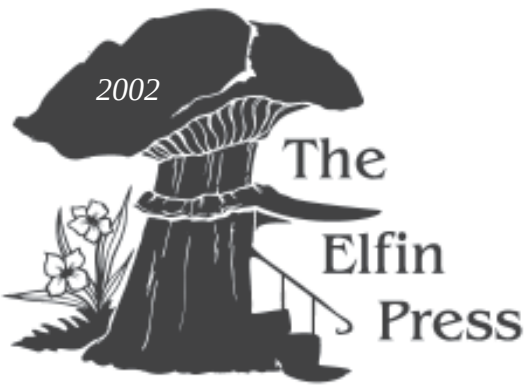

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