

it is then removed, placed in a dry cloth, and returned to the press. It should not remain in press longer than eight to ten hours, at any time without turning. Avoid a strong current of air, as cracking will be rendered more liable thereby; nevertheless, proper ventilation is rather important. A weight of 100 to 125 pounds is sufficient pressure, and twenty-four to thirty-six hours are required to complete the operation. After being removed from the press, daily turning and rubbing with melted butter is necessary.

TO MAKE CREAM CHEESE.

Take one quart of very rich cream, a little soured; put it into a linen cloth and tie as closely as you can; then hang it up to drain, for two days. Take it down and carefully turn it into a clean cloth, and repeat the draining. Now spread a clean linen cloth upon a deep soup plate, and place the contents thereon, and cover over with another cloth. Continue the process of turning the cheese, each day into a clean cloth and dish, until it ripens, which will be in ten to fourteen days, depending on the heat of the weather.

*From 70 ans. Gr. in Agric. Socy.
1854-57.*

THE FOREST TREES

OF WISCONSIN.

BY I. A. LAPHAM.

That the great Forest, and the Forest Trees of our country, are worthy of much more attention, not only from the cultivator, but also from the artizan, and even the statesman, is evident to every one who bestows upon them a thought; and it is gratifying to every true and intelligent lover of his country, to know that the recent efforts made to direct public attention to their importance, to the importance of their preservation, and to the ne-

cessity of providing for their restoration where they are already destroyed, have been, to a considerable degree, successful. We may hope to see the time when many of our farmers and landholders will deem it a part of their duty to plant trees. Should this be done to any considerable extent, their successors, at least, will have cause to honor and respect the forethought that preserved and handed down to them, their full share of this great source of national wealth.

The dense forests have a marked effect upon the climate of the country in several ways. They protect our houses and our cattle from the rigors of the north winds of winter, and from the fierceness of the burning sun in summer. They preserve the moisture of the ground, and of the air; and render permanent and uniform the flow of water in springs, brooks and rivers. By the fall of their leaves, branches, and trunks, they restore to the soil those elements of vegetable life and growth, that would without this natural process, soon become exhausted, leaving the soil barren and unproductive. Their leaves absorb the carbonic acid from the atmosphere and restore to it the oxygen; thus rendering it more pure and better suited for respiration by man and animals. Without this restorative agency, all animal life would long since have ceased to exist.

The uses to which wood and other products of the forest are applied, are very numerous and various; but so well known to everybody that it would be useless to enumerate them here. With us, wood is consumed largely for fuel, for building houses and other structures, for ship-building, fencing, furniture; and for the construction and repairs of Railroads and Plank roads. It is used for many implements of husbandry and of the household; for making barrels, wagons, carriages, and for charcoal. Large quantities are annually consumed in the smelting of iron, lead, and copper. The working of wood gives employment for numerous artisans, tradesmen, and laborers. The quantity of wood annually consumed in the United States must be enormous. Few persons can realize its extent, or the amount we owe to the native forests of our country for the capital and wealth our people are now enjoying. Without the fuel, the buildings,

the fences, furniture, and thousand utensils, and machines of every kind, the principal materials for which are taken directly from the forests, we should be reduced to a condition of destitution and barbarism.

Trees, besides being useful, are ornamental—they enter largely into the material of the landscape gardener. Desolate indeed would be our dwellings were their environs entirely treeless. They are associated with our early recollections—they become in a great degree companions of our lives; and we unconsciously form strong attachments for such as grow near our homes—thus increasing our love of home, and improving our hearts.

It therefore becomes a duty to study these noble specimens of vegetable growth; we should know what trees we already have in Wisconsin, and what kinds it would be advisable to introduce. Every farmer at least should be familiar with the trees that grow in his woods; and know enough of botany and vegetable physiology to be able to preserve them from harm or injury. He should study to keep up a supply that shall always be equal to the demand—as the intelligent farmer strives to supply annually to the soil (by manures or otherwise), the exhausted elements, so he should provide for an annual growth of wood that shall be at least equal to the amount consumed.

We propose in the following pages to give so much of the botanical characters of the sixty trees indigenous to our State, as will enable any one by the aid of the illustrations to distinguish them with certainty; and also such general information in regard to their several uses, as will tend to call attention to the importance of the subject. A large volume would be required to contain all that could be desired in regard to these trees.

Though we have at present in almost every part of Wisconsin an abundant supply of wood for all our present purposes, the time is not far distant when, owing to the increase of population, and the increased demands from the neighboring States of Illinois, Iowa, and Minnesota, a scarcity will begin to be felt. This scarcity may be considered as already begun in several of the counties along our southern border, where there was originally much prairie and open land. In these counties, the annual fires

being prevented by settlement and occupation, trees are now springing up rapidly in all waste places; and in this way nature is already making efforts to prevent the disasters we are thoughtlessly bringing upon ourselves by the destruction of the forests.

These new growths should be protected as much as possible; in many cases by a good, substantial fence. The value of these waste places, will, in a few years, exceed that of the cultivated land; and this with but very little cost to the owners.

But it would be idle for us, as a State, to rely entirely upon this natural restoration of the forests; we must sooner or later commence the cultivation of wood for the purposes of fuel, lumber, timber, &c., or suffer very much from the neglect.

From a recent report of the Board of Agriculture of the State of Massachusetts, we learn that the experiment of tree-planting has already been tried in that State. MR. WHITING METCALF planted pitch pines about twenty years ago, when he was nearly sixty years of age, and he still lives to reap the mental satisfaction and pecuniary returns, from the entirely successful experiment. From one and three fourths acres ten cords of small wood was thinned out; and there is left about fifteen cords per acre of good merchantable wood. It is estimated that the annual growth will equal at least one cord per acre hereafter; and that the result will be a profit of about thirty per cent. per annum upon the cost of the land, and of the original planting.

In the first and only volume of Transactions of the Illinois State Agricultural Society, there are a number of valuable essays on various subjects connected with the agricultural interests of the "Prairie State," and among them is one by Mr. Edson Harkness, on Tree-Culture. The arguments used apply with almost equal force to Wisconsin, and we cannot do better than to copy a few of his closing remarks:

"One great inducement for entering upon the general cultivation of evergreen trees upon the prairies, is found in the protection they must afford from the severe winds of winter. A belt of cedars, pines or firs, only two rods wide, on the north and west sides of a quarter section farm, would, even at twenty feet high, materially lessen the force of the winter blast—would

pay as a protection to domestic animals, and to the growing of crops; and, with all, give a snugness and individuality to the farm, which must be highly ornamental, leaving out of the account the great beauty of the trees. A district of quarter section farms thus protected, with good buildings, shade trees, orchards, and well-cultivated fields, would render our prairie country one of the most charming portions of the globe. It will take time, labor, wealth and intelligence to bring about these things; but they will be done. There is wealth enough stored up in the soil itself, to render the whole country a garden; and there is industry and intelligence enough in our people to accomplish it.

"In this 'fast age,' when most people expect to realize a fortune in a few months or years, by the rapid growth of cities, or the increase in the value of lands, it may seem very foolish to engage in the cultivation of forest trees, which the planter can hardly expect to see come to full maturity in his own time. Still there is a feeling in the heart of many that it is not right to live exclusively for ourselves, or for the present time—that it is right to look a little to the interests of those who shall come after us; that when we are about to leave the world, it would be quite comfortable to reflect that things are, by our feeble efforts, in a better condition than we found them when we entered it. There are some so fanciful as to suppose that in a future state of existence, the memory of what they have done in this world may, possibly, have something to do with their condition—that their good or evil deeds will follow them. There are others who go so far as to say that we can in a future state look down upon our past career, and see all the consequences of each and every act of the present life. If such should prove to be the case, the man who plants a forest can enjoy its grandeur and beauty in all subsequent time. Every one will form his own opinion as to how these things may be. It is, perhaps, enough for us to know that it is a part of our duty to provide for the wants of our children, and not to confine our efforts exclusively to the things which pertain to the present, and to ourselves."

This subject, the protection of our houses, gardens, yards,

stock, and crops, from the cold blasts of winter, is one of great importance to the farmers of Wisconsin, and should induce the immediate planting of trees where they are needed, even if there were no other reasons for doing so. I have, under several of the species, indicated the characters of the trees that render them useful for this purpose. Of course, the more rapid-growing trees will first be planted, so as to secure, as soon as possible, the expected benefits; but these should always be mingled with others of slower growth and greater value. As the latter gradually attain their maturity, the former may be removed to supply the annual demand. By thus planting different kinds of trees together, we secure a more rapid and better growth; for experience shows that trees when growing together, mutually protect each other, and produce timber that is better—being more straight, solid, and free from knots. Evergreens should be planted with trees of deciduous kinds; but care must always be taken to prevent the too great interference of the branches.

It would be out of place here to enter upon details of the best mode of planting and of transplanting trees—any elementary work will afford such information. The loss of a large number of trees transplanted from the woods and nurseries, is owing to improper treatment, and might be avoided by a little attention to some of the most obvious principles of vegetable physiology. Large numbers of evergreen trees are annually brought from the northern part of this State, from Mackinac, &c., but not one in ten of such trees usually survive the careless process of removal. The proper way to remove trees from their native places in the wood, is to cover the roots as soon as taken from the ground with damp (not wet) moss, which can be secured with twine. By adopting this course, nearly every tree, with careful management after planting, will live. It would be well for every one about to procure trees from the north, to remember this hint. The trees can be packed in open boxes, and thus easily transported. Every raft floating down our rivers, at the proper season, could be made the means of supplying the country with evergreen trees, by a little attention to the above suggestions.

Those persons who are skilled in the business of the nursery-

man, should apply their skill and knowledge in the production of large quantities of young trees, which, being properly prepared, could be transferred to the farmer with much advantage and profit to both parties. Doubtless many farmers and landholders are deterred from engaging in tree-planting, from a want of knowledge and skill in obtaining seeds or young plants, and in rearing them. This would be remedied if a few persons—say one in each county—would establish a nursery, from which his neighbors could, at a moderate price, obtain supplies.

It should be an object with us to preserve, in our villages, towns and cities, specimens of the native forest trees of the State. If those having the care of public grounds would give a little attention to this subject, much beauty and interest would be added to these places. Even the rows of trees along the streets of our towns and cities might be made to represent the ancient forest, now rapidly being defaced and swept away by the all-devouring axe. What lasting beauty and variety would thus be secured for those grounds and streets! A public square filled mostly with trees of any single species, is a beautiful object; but how much more beautiful and interesting it would be if it contained sixty different trees, and an under-growth of an hundred handsome and ornamental shrubs. Such places would at once give character to the locality, and attract to it people of taste and refinement.

It would seem to be peculiarly appropriate for our Universities and Colleges to secure upon the grounds by which they are surrounded, at least one good specimen of each tree and shrub that grows naturally in Wisconsin; and I will venture to predict that the University or College that shall first surround itself with such an "*Arboretum*," will first secure the patronage and good opinion of the people; and will thus outstrip those institutions that show a lack of taste and refinement, by omitting to plant trees.

It is found that the rate of increase of the wood growing on an acre of land is about at the rate of one cord per year. In the native woods, this quantity is annually destroyed by storms and natural decay, thus making room for the new growth. A fami-

ly of ordinary size could therefore be supplied from ten acres of timber without diminution of the quantity on the land. By selecting always, for removal, the poorest and least thrifty trees, and by a proper care of the remainder even a less number of acres may be made to afford this supply. Almost every farmer has on his grounds a least this amount of land over the quantity which he wishes to cultivate annually in crops; and by planting it to trees he may be securing to himself and his posterity quietly and gradually numerous blessings.

If our several Railroad Companies could be made to see their true interest and to act upon it, they would immediately plant rows of trees and a hedge along both sides of their roads. These by their growth would save the cost of fencing and supply the ties and timber that will very soon be wanted to repair and to renew their structure. Different kinds of trees should be selected to suit the different qualities of soil. What a beautiful feature this would give to the landscape! It would afford shelter and shade to the trains. The trees and hedges might be so disposed as to keep off the bleak winds in winter and prevent in a great degree those accumulations of snow that now so often stop the trains.

The Illinois Central Railroad Company have contracted for the planting of three rows of locust trees on each side of the Illinois Central Railroad for the distance of one hundred and twenty miles. The rows are to be set eight feet apart, and the trees three feet from each other. In eight years, it is said, the trees will furnish ties in place of those which have become rotten. They will also furnish a delightful shade in summer, and a protection from the snow drifts in winter.

Upon the completion of our several lines of Railroads, when the officers shall have time to think of other things besides the first construction, it is hoped that greater attention will be given to this subject.

That the great forests of Wisconsin are rapidly disappearing will be quite evident to any one who will reflect a moment upon the vast amount of wood annually consumed for fuel by the people for domestic purposes, by the railroad locomotive, and by

the steam engines scattered over the State; for lumber to supply our own demand and for exportation, and for the thousand other purposes to which wood is annually applied. The rapid increase of population is constantly augmenting this draft upon the forests. Already vast quantities of lumber and fuel are annually exported to Illinois; and very soon, as her population increases and her railroad facilities are perfected, Minnesota will call upon us with heavy demands for lumber to enable her to "populate her prairies and thinly timbered districts.

The immense lumbering establishments on our rivers are annually converting large numbers of the magnificent pine trees—the growth perhaps of centuries—into a marketable form for consumption and exportation,—one of these establishments yielding no less than twenty millions of feet of lumber per annum.

It is much to be regretted that the very superabundance of trees in our State should destroy, in some degree, our veneration for them. They are looked upon as cumberers of the ground, and the question is not how shall they be preserved and beautified, but how shall they be destroyed. Place a few of our noble oaks, or elegant elms, or majestic firs in any of the older countries, and they would be looked upon as one of their finest ornaments. The Great Elm on Boston Common is venerated by old and young; the aid of iron bars has been invoked by Mayor Smith, to protect it from harm; and books have been written to preserve its history. The loss of an oak tree lately, in Connecticut, sent a thrill of regret throughout the land.

It happens that the trees of Wisconsin all belong to one division of the vegetable kingdom; that division which includes plants that grow by the deposit of an external layer of wood annually—hence called *EXOGENS*, or outside-growers. They are of two kinds; *Angiosperms*, having seeds inclosed in a capsule or fruit, which in germination present two cotyledons or seed-lobes; and *Gymnosperms*, having the seeds naked in an open scale, the cotyledons mostly more than two. This last kind includes only one family, the *Coniferae*, or Pine Family, which is mostly evergreen, while the *Angiosperms* of our State are all deciduous.

The Gymnosperms or plants having proper seed-vessels are arranged under three general heads. Under the first are placed those having the corolla or flower-leaves consisting of more than one petal, which is the case with the bass-wood, maples, locust, cherry, and plum trees.

The next division includes such as have the corolla of but one petal, of which the Ash is our only arborescent example.

The third division includes such as have no petals; like the Elm, Sycamore, Walnut, Oak, Birch, Willow, and Poplar.

All plants are arranged in recent botanical works into natural groups called *Orders* or *Families*, in which those species most resembling each other in essential characters are brought together. This method of classification is, on many accounts, far superior to the artificial classes and orders of Linnaeus, where the number, situation, &c., of the stamens in the flowers were alone considered, and plants of the most opposite characters were brought together into the same class. As it seems important that all should understand this natural and convenient arrangement of plants it has been adopted here. It will be found as convenient for all purposes as any that could have been adopted, and at the same time conforms, as near as can be, with the system of nature herself.

DIVISION I,—POLYPETALOUS.

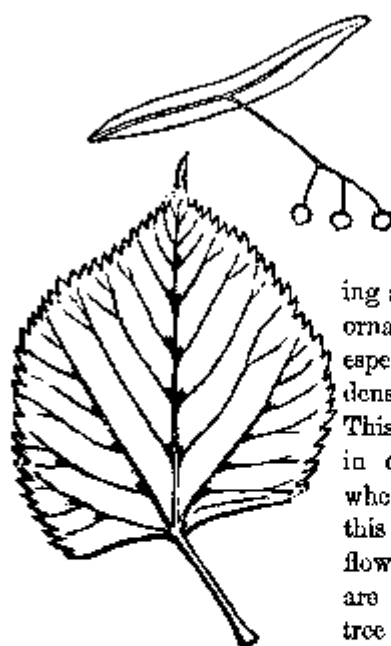
ORDER I. TILIACEÆ.—THE LINDEN FAMILY.

1. *Tilia Americana*, of Linnaeus.—Common Basswood.

There is but one kind of Basswood found in Wisconsin.—It is a very common tree in the thickly wooded parts of the State, especially where the soil is a little moist and rich. Where the basswood is found growing plentifully in the woods the farmer need not hesitate to make his "location," for the tree is a sure indication of a good soil. It shows a strong disposition to grow in little groups of three or more together; which may be account-

ed for on the supposition that a former tree has been destroyed, and that the present clump is the grown up sprouts that always succeed such destruction.

Although the wood is soft, destitute of strength and durability,



COMMON BASSWOOD.

and has but little value as fuel, it is well suited for many useful purposes. It splits easily into rails, and will last a long time if not used for those that lie on the ground. Basswood is extensively used for laths, and it is the material for carving and for wooden shoes. As an ornamental tree it has few superiors, especially where regularity of form, density of shade, etc., are desirable. This is the case along the side-walks in our cities, towns and villages, where, however, we but seldom see this tree. The fine fragrance of the flowers and great rapidity of growth are other recommendations of this tree for such purpose. The very curious contrivance by which the seeds

are held up in the air so as to afford the wind an opportunity to waft them a considerable distance before they reach the ground is worthy of notice.

The fruit-stalk hangs from middle of a long narrow leaf, has a kind of spiral twist, like a plow-share; so that in falling, this leaf is constantly whirling round and round like the arms of a boy's wind-mill, which very much retards the fall to the ground. This is another of those beautiful contrivances by which the great Creator accomplishes his all-wise purposes. Such contrivances might be found every where in nature, if we would take the trouble to look for them. When the eastern counties of Wisconsin began to be settled twenty years ago, and when of course the resources of the country had been but very little developed, resort was had to the basswood trees to sustain the

stock through the long winter months. Great numbers of fine large trees were cut down for no other purpose than to afford a bite for the cows and oxen. The tender branches and the mucilaginous buds are excellent for this purpose. It is said that in some countries the leaves are annually gathered for fodder, as regularly as we make hay for the same purposes.

There are other genera and quite a number of species belonging to this family, but *Tilia* is the only genus found in our climate and latitude; all the others belong to the more southern climes. There are four species of Basswood in the United States, one of which (*T. heterophylla*, Vent.) is found growing naturally in the rich bottom lands in the Ohio river valley. This species, with the leaves white and downy beneath, is larger and more ornamental than the common Basswood, and should be introduced among our ornamental trees. As it grows so near us, it would doubtless do very well in Wisconsin.

ORDER II. SAPINDACEÆ.—THE SOPEBERRY FAMILY.

Under this Family botanists now arrange the Maples (*Acerineæ*), as a section or sub-order.

2. *Acer Pennsylvanicum*, of Linnaeus.—*Striped Maple*.

The Striped Maple is so called on account of the dark stripes or lines on the bright green bark.

The racemes of flowers are drooping, and loose. In other respects, this small and slender tree resembles the Mountain Maple. It is found in the vicinity of Lake Superior, and will undoubtedly be detected within our State, when the natural productions of the interior and northern counties come to be examined. This tree is often called Moose-wood—the young branches being eaten (in winter especially,) by the Moose. It would make a most beautiful ornament in any of our yards and gardens.

3. *Acer Spicatum*, of Lamarck.—*Mountain Maple*.

The Mountain Maple, is so small as hardly to deserve the name of a tree. It grows about wet, springy places on hill sides,

near rocks, &c. It makes rather an ornamental appearance, the numerous racems of flowers standing erect above the leaves, are soon followed by the bright red fruit. I am not aware of any useful purpose to which it has been applied. The Mountain



STRIPED MAPLE.

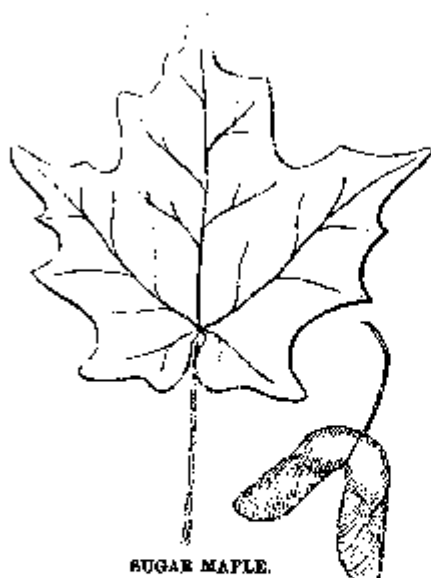
Maple is found in the forests throughout this State; but as it has not been detected in Illinois, we are probably on its southern geographical limits. It extends eastward to Maine, but its western limits are not known. The leaves assume a yellowish red color in autumn, adding much to the beauty and interest of the species for ornamental purposes. The young twigs are bright green; the bark of the trunk, bright gray. The flowers appear in May, and the seed with slightly diverging wings resemble

those of the sugar maple in form, but are much smaller, more delicate, and of a very different color. The figure of the leaf is half the natural size; of the fruit, the full size.

4. *Acer Saccharinum*, of Wangenheim.—*Sugar Maple*.

This well known and highly valuable tree forms dense groves in many places, but more especially in the eastern and northern parts of the State. Some of these groves, called "maple openings," are among the most beautiful and interesting of our forest scenery. These groves often occupy the sites of deserted Indian villages, being the first to take possession of the abandoned grounds. The wood is in great demand for various useful and ornamental purposes; and thousands of the trees are annually "tapped" to draw sap for the manufacture of "maple sugar." Over six hundred thousand pounds of this sugar are annually made in Wisconsin.

The Sugar Maple is often, and very deservedly employed as an ornamental tree about the streets of towns and cities; its beauty of form, bright green foliage, and the brilliant autumnal tints assumed by the leaves, are so many very desirable qualities



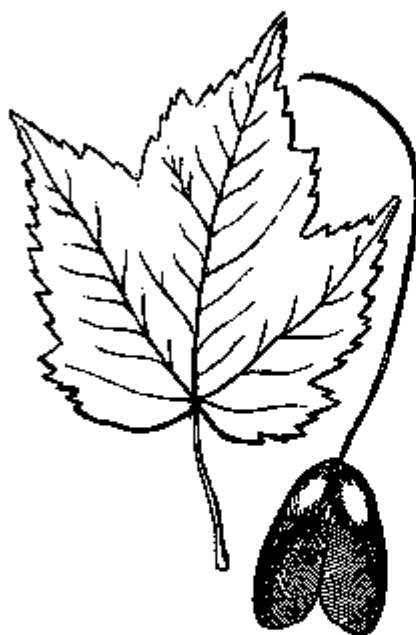
SUGAR MAPLE.

in this fine tree for such purposes. But the slowness of its growth is quite an objection, in this "fast age;" hence, the Sugar Maple should be planted alternately with some more rapidly growing species, that can be cut away when the maple has attained a sufficient size to answer the purpose of ornament and shade. Another very serious objection to this tree is, the temptation recurring every spring to tap it for the sweet sap it then contains—thus materially

injuring the tree, and retarding its growth. It is a principle laid down in the books on ornamental and landscape gardening, that all trees having useful qualities should be avoided in making selections for these purposes; thus removing all temptation to destroy the ornamental by converting them into the useful. Though the sap of all the maple family contains sugar, this is the only species that affords it in such abundance as to be of much practical value. The Black Maple, (*Acer nigrum* Michx.) is only a variety of the Sugar Maple, not having permanent characters to distinguish it from that species. The flower of the Sugar Maple appear in May; and the seeds are ripe in September. The figure represents a leaf and the ripe fruit, both reduced to one half the natural size.

5. *Acer dasycarpum*, of Ehrhart.—Silver Maple.

This species of Maple is found growing abundantly along the Mississippi river, in this State, where it is cut with other kinds of wood to supply the numerous steamboats with fuel. It is



RED MAPLE.

distinguished from the other species of maple by the flowers being on short pedicels, appearing before the leaves, the small number of stamens (8 to 6); the notches of the leaves are rather acute, deeply cut and toothed; the leaves downy beneath when young, and of a bright silvery color; fruit large, divergent, of a greenish color, and woolly in its young state.

The wood is soft and possesses but little value having very little strength or durability. As an ornamental tree, however,

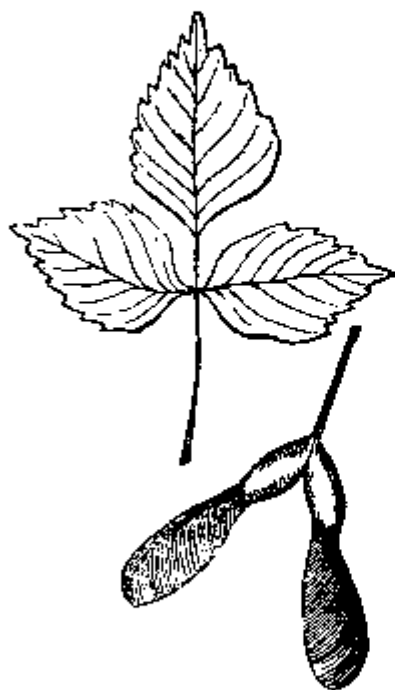
it possesses some good qualities; among them we may mention the beautiful contrast between the deep green of the upper and silvery lower surface of the leaves.

6. *Acer rubrum*, of Linnaeus.—Red Maple.

This species of maple is too well known to need especial description here. It prefers low, damp situations, along the margins of rivers, &c., but flourishes very well in the higher lands. The brilliant scarlet flowers are among the earliest to appear in the spring, preceding the leaves, and covering the tree as with a beautiful mantle. The young shoots are also red, contrasting finely with the green leaves. It is, therefore, one of our most

ornamental trees, and is often transplanted to the streets and yards of our towns and cities. The Red Maple is a moderate-sized tree, seldom attaining the height of the sugar tree; it has a rapid growth; and the wood, though very valuable, is inferior to that species. The flowers appear in April or May—sometimes even in March—and the fruit ripens in August or about the first of September. The figure represents a small leaf, and the fruit, both of the full size of nature.

7. *Negundo aceroides*, of Mærch.—*Box Elder*, or *Box Maple*.



BOX ELDER.

This tree was placed by Linnæus under the genus *Acer*, but later botanists have constructed for it a new genus, (*Negundo*,) on account, chiefly, of the pinnate leaves, and the want of petals in the flowers. It is quite common along the Mississippi river in this State, and extends eastward as far as the Rock river valley. In the Atlantic States it does not reach north of Pennsylvania; but at the west it is found on the Saskatchewan river, as far as the 54th degree of north latitude. Here, according to Sir John Richardson, the

natives make a very dark colored sugar from the sap of this tree. The Box Elder is a small tree; the foliage and young twigs light green. The growth is quite rapid—fifteen or twenty years being sufficient to bring the tree to maturity. It is deemed quite an ornamental and desirable tree in England, where it was introduced from this country as early as 1618.

Like the red maple, this tree grows most naturally in the low rich grounds along the margins of rivers; and in such situations it might perhaps be cultivated with profit, on account of its rapid and vigorous growth. The figure shows a leaf which is compound, or pinnate, of one fourth the natural size. Very often, and especially in specimens from further South, there are five leaflets, instead of three, as here represented. The fruit is shown of the size of life. The flowers appear in April or May; and the fruit ripens early in the season.

The six species noticed above are all that are known in the northern United States. There are five other species west of the Rocky Mountains, and one in Louisiana.

ORDER III, LEGUMINOSÆ.—THE PEA FAMILY.

8. *Gymnocladus Canadensis*, of Linnæus.—*Kentucky Coffee Tree*.

I have never seen this tree growing in Wisconsin; but Dr. P. R. Hov, of Racine, has detected it on the bottom lands in Green county. This may therefore be deemed to be its extreme northern limit. The Coffee Tree may be known by the very large, twice-pinnate leaves, sometimes two to three feet in length, though the leaflets are only from one to two inches long. The bark is very rough, and the branches stout, and abruptly terminated, giving the tree in winter the appearance of a dead stump. From this circumstance, the early French settlers called it *chicot*, or the stump tree.

Michaux says "the wood is very compact, and of a rosy hue. The fineness and closeness of its grain fit it for cabinet-making, and its strength renders it proper for building. Like the Locust, it has the valuable property of rapidly converting its sap into perfect wood, so that a trunk six inches in diameter has only six lines of sap, and may be employed almost entire."—(N. Am. Sylva, vol. 1, p. 122.) It usually grows with a slender trunk, a tree fifty or sixty feet high being only twelve to fifteen inches in diameter. But if separated from the dense forests in which it is usually found, it grows with a spreading head, affording ample shade for a large space of ground, and being altogether a very beautiful object.

Downing considers this tree very important as an ornament about our houses and yards, where it is well entitled to a place. "In summer, its charming foliage and agreeable flowers render it a highly beautiful lawn tree; and in winter, it is certainly one of the strangest trees in appearance in our whole native sylvia. Like the *Ailantus*, it is entirely destitute of small spray, but it also adds to this the additional singularity of thick, blunt, terminal branches, without any perceptible buds. Altogether, it more resembles a dry, dead, and withered combination of sticks, than a living and thrifty tree. This rare and very unique exception to the usual beautiful diversity of spray and ramification is highly interesting in the neighborhood of other full-sprayed species, where the curiosity which it excites will add greatly to its value as an interesting tree at that season of the year."—(*Landscape Gardening*, p. 117.)

The Coffee Tree flowers in June, and the pods are ripe for gathering in October. The seeds are very hard, and should be immersed for a few minutes in boiling water. Thus treated, they vegetate freely. Our Wisconsin people would do well to obtain a supply of these seeds, and cultivate this valuable tree.

R. Gleditsia triacanthos, of *Linnaeus*.—*Honey Locust*.

According to the observations of the late much lamented Prof. S. P. Lathrop, this tree grows as far north as the vicinity of Beloit, in the valley of Rock river. It may be known by its numerous large thorns, its delicate doubly pinnate leaves and its long brownish pods. In the valey of the Ohio it attains its greatest perfection. Though not a very important tree for any useful qualities, it is well worthy of cultivation on account of its beauty.

Mr. Downing in his standard work on *Landscape Gardening*, speaks of it as "much finer in appearance than the common locust, (*Robinia pseudacacia*) although the flowers are greenish and inconspicuous, instead of possessing the beauty and fragrance of the latter. There is, however, a peculiar elegance about its light green and beautiful foliage, which wafts so gracefully in the summer breeze, and folds up on the slightest shower, that it stands far above that tree in our estimation, for the embellishment of

scenery. The branches spread out rather horizontally in a fine broad and lofty head; there are none of the dead and unsightly branches so common on the locust, and the light feathery foliage, lit up in the sunshine, has an airy and transparent look rarely seen in so large a tree, which sometimes produces very happy effects in comparison with other trees. The bark is of a pleasing brown, smooth in surface; the branches are studded over with curious, long triply-pointed thorns, which also often jut out in clusters in every direction from the trunk of the tree, to the length of four or five inches, giving it a most singular and forbidding look. In winter, these and the long red pods which hang upon the boughs at that season, give the whole tree a very distinct character. Another recommendation of this tree is the variety of picturesque shapes which it assumes in growing up; sometimes forming a tall pyramidal head of fifty or sixty feet, sometimes a low, horizontally branched tree, and at others it expands into a wide irregular head, quite flattened at the summit. When but a limited extent is devoted to a lawn or garden, this tree should be among the first to obtain a place; as one or two, mingled with other larger and heavier foliage, will at once produce a charming variety.

There are some specimens of this fine tree in the vicinity of Milwaukee, having been introduced as early as 1837, by Dr. W. P. Proudfit. It has been recommended, among other plants as a substitute for the English hawthorn for hedges; but does not seem to be much employed for that purpose. It might be made to answer for such defences as are only intended to guard against cattle, etc., as along the lines of railroads, and on stock farms.

The trees with leguminose pods growing naturally in the north-western States, but not yet detected growing naturally in Wisconsin, are

1. The Locust *Robinia pseudacacia* Linn., extensively cultivated throughout Wisconsin—and deservedly so—on account of the value of the wood and the beauty of the tree for purposes of ornament, &c.

2. *Cercis Canadensis*, Linn., Red Bud, or Judas tree. A small ornamental tree completely covered with bright red flowers early

in the spring. It should be introduced into all ornamental grounds and would doubtless withstand the rigors of our climate. It grows naturally in middle Illinois.

3. *Gleditsia mono sperma*, the honey locust with pods bearing only one seed, was found in southern Illinois by Michaux; but, later botanists have not been able to find it there.

ORDER IV. ROSACEÆ.—THE ROSE FAMILY.

This large family of plants includes not only the true Roses, but, under its several subdivisions, the Plum, Cherry, and Spiræa; the Geums, and Potentillas; the Strawberry, Blackberry, and Raspberry; and the Thorns, Apples, and Pears. Many of the most valuable fruits peculiar to this latitude and climate belong to the Rosaceæ. A large share of the species are herbaceous, or shrubs, and therefore do not fall under our notice, at present. There are nine, mostly small trees, in Wisconsin, belonging to the family under consideration,—being one-sixth of the whole number; and the proportion of plants of this family to the whole number of Wisconsin flowering plants, is as one to twenty-five.

10. *Prunus Americana*, of Marshall.—The Wild Plum.

This small tree, with its rich red or yellow fruit, grows very plentifully in every part of the State, where there are low, damp, rich grounds, especially along the margins of rivers and swamps. The flowers appear in May, before the leaves are fully expanded, and the fruit is ripe in August. The tree is much branched, and beset with strong thorn-like stubs, forming a strong protection to the fruit, and causing much trouble in gathering it. The wood is hard, of a dark reddish color, resembling the wild cherry. If it could be obtained in sufficient quantity, it might be substituted for that wood in cabinet-making, &c.

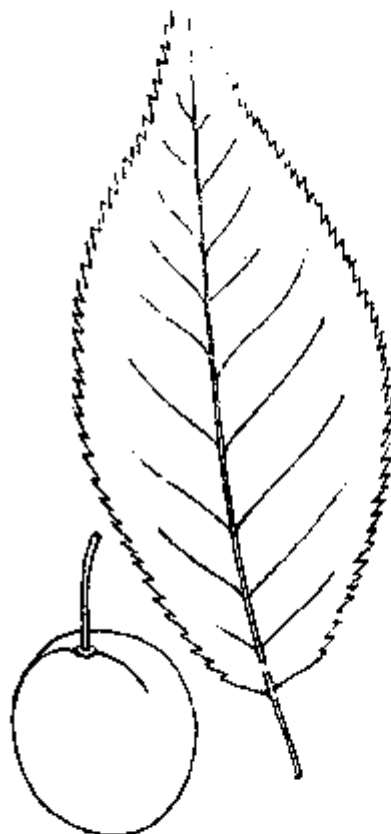
The Wild Plum naturally runs into numerous varieties. Mr. Nuttall counted no less than a dozen different kinds in one orchard examined by him, in Canada. This natural tendency shows that differences of soil and culture have decided effects

on this wild fruit, and may be a hint to fruit-growers to make experiments with a view to its improvement. Dr. Darlington informs us that it has been improved by long culture, in eastern Pennsylvania, both in size and flavor, the fruit some-

times attaining the size of a common apricot; though it is not probable that any very special efforts were made to produce this result.

With the skill of modern fruit culturists, it might, without doubt, be greatly improved. It has the decided advantage over the garden varieties of not being attacked by the curculio, the pest that destroys the fruit of our finest kinds without mercy.

The Wild Plum appears to have been formerly much cultivated in our country; and from some indications it is probable that several of the Indian tribes may have planted this tree near their villages. The thickets of wild plum trees are usually allowed to remain by the first occupants of our new lands;



WILD PLUM.

but the introduction of better kinds soon cause them to be abandoned.

This species was first described very fully and accurately by Humphrey Marshall, of Pennsylvania, in 1785, but has been confounded with others, by some writers. The errors were detected as early as 1829, and pointed out by Dr. Darlington, in

the *Annals of the New York Lyceum of Natural History*; yet we find English botanists still copying the old blunders. Even in the last work of Loudon, it is placed under the name of *Cerasus nigra*—the black *cherry*! There can be no doubt that the name given by Marshall, and adopted by all American authors, is the proper one—having been first applied.

The figure represents the leaf and fruit, of the full size of nature.

There are in the United States four different species of native or Wild Plum; one of them (*P. maritima*, Wang.) is confined to the Atlantic States; another, (*P. glandulosa*, Hooker,) has only been found in Texas; and the last, (*P. chicasa*, Michx., the Chickasaw Plum,) grows as near to us as the southern part of Illinois and the adjacent parts of Missouri.

11. *Prunus Pennsylvanica*, of Linnaeus.—Bird Cherry.

The Bird Cherry is not very common with us. It has been detected in the vicinity of Milwaukee; Mr. John Townley has found it in the interior of the State, and Professor Agassiz carried it from the shores of Lake Superior.

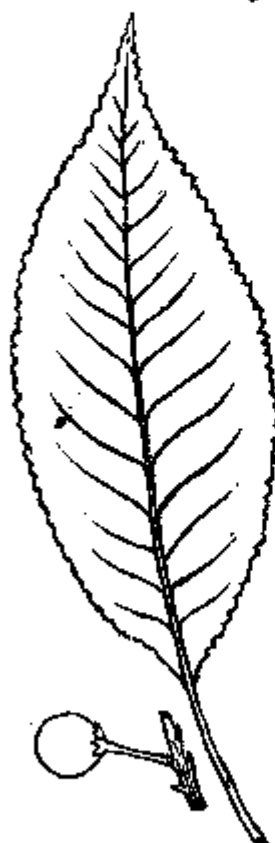
The bark of this tree is, like that of most of the cherries, smooth and brown, detaching itself laterally; the wood is fine grained, of a reddish hue; the inferior size of the tree only forbids its use in the mechanical arts. Of all the American species this one bears the greatest analogy to the cultivated cherry tree imported from Europe.

In Professor Emmons' very valuable Report on the Trees and Shrubs of Massachusetts, we find it stated that this tree grows in the most exposed situations; in some parts of Maine and New Hampshire, it springs up abundantly on soil which has been recently laid open to the sun in clearing, and especially after it has been burnt over. There is a common opinion among the ignorant that it springs up without seed, in consequence of some action of heat upon the soil. If they would take the pains to examine, they would, however, find great quantities of the seed (or stones as they are called,) just beneath the surface of the ground. This excellent advice of Prof. Emmons—to examine

—if carried out, would save us from many false theories and incorrect conclusions in regard to similar cases.

The small red fruit, (about the size of a pea) ripens in July. The tree can be distinguished from the common wild cherry by the growth of the flowers and fruit, which is in clusters in the axils of the leaves, like the garden cherry. In both of the following species the flowers and fruit grow in racemes (like a bunch of grapes or currants,) at the ends of the branches. Michaux describes this specie under the name of *Cerasus borealis*, or the Red Cherry.

12. *Prunus Virginiana*, of Linnæus.—Choke Cherry.



WILD BLACK CHERRY.

The Choke Cherry may be distinguished from the next species, by its much smaller growth; its broader, ovate, sharply serrated leaves; the short and close racemes; the lighter color of the fruit, etc. It would make a handsome ornament in our pleasure grounds on account of its bright shining foliage, and the numerous spikes of white flowers. It does not attain sufficient size to be of any use in the arts of life. The flowers appear in May, and the fruit ripens in July and August. It grows very abundantly throughout the State.

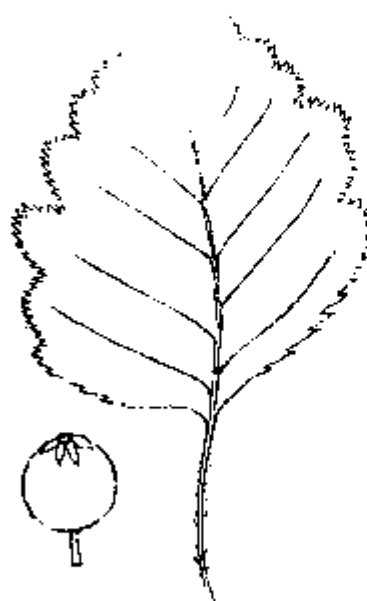
13. *Prunus serotina*, of Ehrhart.—Wild Black Cherry.

This species, too well known to need description here, is found very commonly in the timbered parts of the State, where the trees are cut into logs and used for cabinet work. For this purpose the wood of the Wild Cherry is a great favorite. It is almost equal to the imported mahogany, and is preferred to the black-walnut, on account of its lighter and less sombre appearance.

The tree is also quite ornamental in its growth and appearance, and besides has the merit of attracting to it a constant throng of singing birds. A few trees should be preserved in the vicinity of every homestead in Wisconsin, if for no other purpose, for that of attracting the feathered songsters near our premises. Besides feeding on the wild cherries, they will destroy for us immense numbers of insects, and thus prevent their depredations.

The flowers appear in May, and the fruit ripens early in the summer. The figure shows the form and general character of the leaf and fruit, both of the natural size.

14. *Crataegus coccinea*, of *Linnæus*.—*Scarlet Fruited Thorn*.



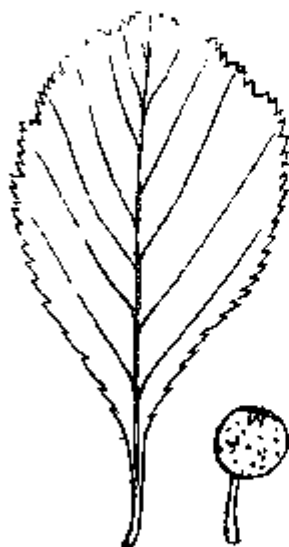
SCARLET FRUITED THORN.

This thorn, of which there are many varieties, may be known from the other species by the large bright red globular fruit; or, in its younger state, by the leaves, which are roundish, ovate, thin, lobed, sharply toothed, and abrupt or heart-shaped at the base.—Some botanists have ranked the varieties as distinct species. It prefers rich bottom lands, but grows well in almost any kind of soil. It is the most abundant species of thorn in Wisconsin. The flowers appear early in May, and the fruit is ripe in September. It is a small tree, usually with a regular roundish

head, making a very handsome appearance. The Scarlet Fruited Thorn has been recommended very strongly for hedges, and for screens to protect our houses, etc., from the cold of winter. For this last purpose they must be trained to grow into a sort of thin high hedge, the branches being twined together in one di-

rection and clipped off in the other. Transplant young trees of uniform size and set them about two feet apart. For hedges it is inferior to the next. The fruit is edible; and but for the smallness of size and the hard stony seeds, would be a useful article of food. It resists the action of the severest frosts—remaining sound after the extremely hard winter just past. The flowers emit a very strong and rather disagreeable odor when fully out, and the tree is then a very beautiful object. The figure shows the character of the leaf and fruit of the natural size.

15. *Crataegus punctata*, of Jacques.—Dotted-Fruited Thorn.



DOTTED-FRUITED THORN.

This is usually smaller than the last, the fruit dull red, or yellowish, and dotted; the leaves will at once distinguish the species, being wedge-shaped, and tapering below into a slender petiole. Like most of the thorns, it prefers to grow along the borders of rivers, etc., flowering in May and ripening its fruit in September.

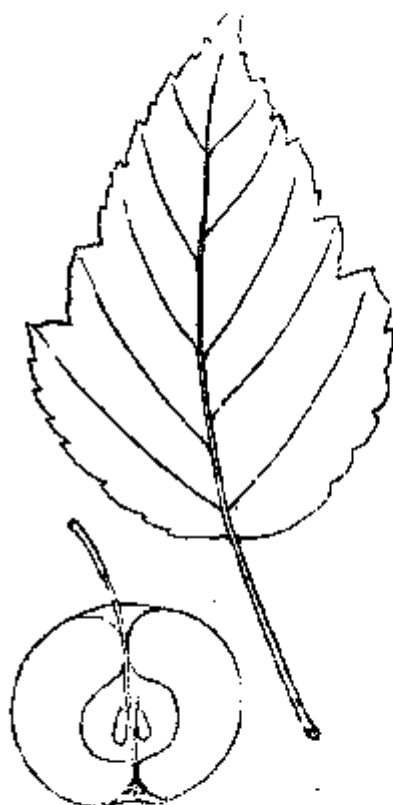
This is the best native hedge plant we have. When properly treated and trimmed it forms a very dense hedge thro' which even thievish boys would find it difficult to penetrate. It is quite desirable that experiments should be made to determine the value of the dotted-fruited thorn in this respect. It is hardy, and may be relied upon as proof against winters. The figure on this page represents the form of the leaf and fruit of the natural size.

16. *Pyrus coronaria*, of Linnaeus.—Crab Tree.

This well known tree is quite common in Wisconsin, presenting its large, fragrant flowers in great profusion in May, and its rich fruit ripe in September. Were it not so common, it

would be highly prized as an ornamental tree, on account of its beauty of form, fine foliage, large, rose-like flowers, etc. A hedge made of it must be one of the finest kind; especially if trees at each angle, and at regular distances on the straight lines

are allowed to grow and assume their beautiful rounded heads. It would be worth our while to form such a hedge on account of the fragrance of the flowers in the spring. The fruit of the crab-apple has been used for preserves, but it soon gives way to the cultivated apple. It has also been used to make cider, for which purpose it is said to be well adapted. The figure shows the outline of the fruit, and a section of the apple, both of the size of nature.



CRAB APPLE.

occasionally found as far south as the latitude of Milwaukee, which is its extreme southern limit in that direction in Wisconsin. It is chiefly prized about our gardens and yards for its fine foliage, bright green twigs, large clusters of white flowers, and especially for brilliant bunches of scarlet fruit.

The flowers appear in June, and the fruit, which is ripe in September, remains on the tree during the winter.

17. *Pyrus Americana*, of
De Candolle.
American Mountain Ash.

This small, but very ornamental tree, grows abundantly in the northern parts of the State, and is

18. *Amelanchier Canadensis*, of Torrey & Gray.—June Berry.

This small tree is known by different names in different parts of the country. Some know it under the name of Service Berry, and some of our friends down east call it Shad-Bush, because its flowers appear simultaneously with the shad! Its abundant white flowers enliven the forests early in the spring, and its berries afford an agreeable repast for many of its feathered denizens. There are half a dozen different varieties, some of which have been ranked as species, but they are all now deemed only varieties of one species. I know of no useful purpose to which this small tree has been applied.

DIVISION II.—MONOPETALOUS.

ORDER V. OLEACE.—THE OLIVE FAMILY.



WHITE ASH.

The Ash trees have been referred to the same natural family as the Olive of the South, (*Oliaceæ*), though they differ so much in their botanical characters from the type of the family that many have doubted the propriety of the reference.

19. *Fraxinus Americana*, of Linnaeus.—White Ash.

The wood of the White Ash has the same general qualities of toughness, elasticity and strength as the common Ash of Europe, which has been esteemed for these qualities since the remotest times.

The following enumeration of some of the principal uses to which this wood is applied; will indicate its value in the arts. It is used for the tongues, and other parts of wagons, sled-runners, handles for wheel-barrows, scythes, rakes, hoes, pitch-forks,

etc., for chairs, wooden bowls, hoops, staves, sap-troughs, blocks, pins, pump-boxes, hand-spikes, etc., for ship building, and especially for oars. No other wood is so valuable for oars, large numbers of which are annually made and sent down to the sea from the forests in the interior. The wood is quite soft when first cut, and easily worked, but becomes hard when dry and seasoned. It takes its name of White Ash from the light color of the wood. From the rapidity of its growth the annual rings or layers of wood are of unusual thickness. The tree grows straight and tall, the grain even, so as to split readily into straight rails.

It is reported that an Ash leaf rubbed upon swellings caused by the bite of mosquitoes, removes the itching and soreness immediately. The same effect is produced on the poison occasioned by the sting of the honey bee. It is also stated that the rattle-snake will not approach the place where the White Ash grows; that a branch, with its leaves, is a sure protection against that poisonous reptile; and that weeds and grain will scarcely grow in its shade. But these assertions require confirmation.

The flowers of the White Ash come out in May, and the curious-looking fruit is ripe in July. For ornamental purposes the Ash is not a favorite; for though when young it assumes a beautiful form, age will soon break its charms; and one writer recommends that it be planted only in some inconspicuous corner among other trees.

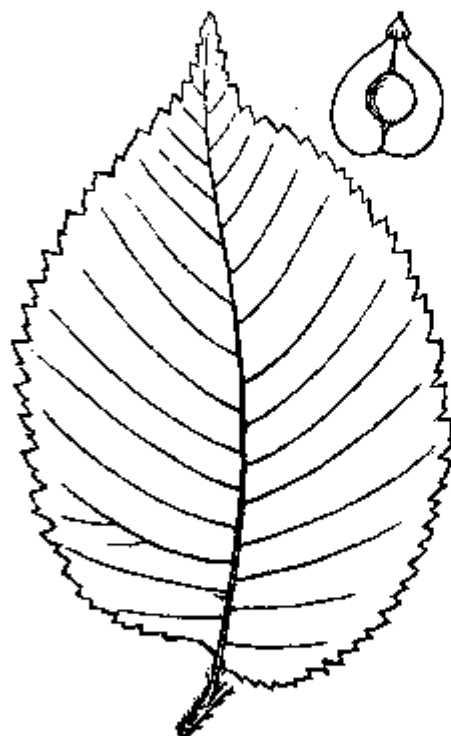
Downing considered the highest and most characteristic beauty of the White Ash to be the coloring which its leaves put on in autumn, when it can often be distinguished from the surrounding trees for four or five miles, by the peculiar and beautiful deep brownish purple of its fine mass of foliage. The color, though not lively, is so full and rich as to produce the most pleasing harmony with the bright yellows and reds of the other deciduous trees, and the deep green of the pines and cedars.

The figure represents a leaf of one-fourth the size of nature, and the fruit of the full size.

20. *Fraxinus sambucifolia*, of Lamarck.—Black Ash.

The Black Ash usually grows in swamps or very wet places. It may be distinguished from the White Ash by the greater

number of pairs of leaflets, which are sessile, with an obtuse base, and by the absence of a calyx in the flowers. It is sometimes very difficult to distinguish the species by the bark alone. The Black Ash is much the most abundant kind in Wisconsin, finding many places suited to its growth in the eastern and northern parts of the State. It is a smaller and much less valuable tree, though it is applied to many useful purposes. The wood is tougher and more flexible than that of the White Ash,



SLIPPERY ELM.

qualities that render it more valuable for hoops. The thin layers of wood are easily separated into long narrow strips, or splints, formerly much used for baskets and for chair-bottoms. The large knots are used for wooden bowls, not being liable to crack. The flowers appear and the fruit ripens about the same time as the White Ash.

The Blue Ash (*F. quadrangulata*, Michx.), is found in Ohio and in Illinois. It is said to be found also about Lake Superior, in upper Michigan. If so, it undoubtedly exists in Wisconsin, although I have never seen it here.

The Red Ash (*F. pubescens*, Waltr.—*F. tomentosa*, Michx.) is a native of Ohio and Michigan; and the Green Ash (*F. jaglandifolia*, Lam.) is also an Ohio species. These are all inferior in useful qualities to the White Ash, and are not very abundant in the places where they are found.

DIVISION III.—APETALOUS.

ORDER VI. URTICACEÆ.—THE NETTLE FAMILY.

To this order belong the Elms and Hackberries, constituting a section or sub-order named *Ulmaceæ*, the Elm Family.

21. *Ulmus Fulva*, of Michaux.—*Strippery Elm*.

This Elm is less common than the next species, in Wisconsin. It has a more rapid and vigorous growth, and coarser foliage. It is wanting in the beauty and graceful form of the common Elm, and is therefore much less valuable as an ornamental tree. Another serious objection to the tree for purposes of ornament, is the mucilage of the inner bark, which form its valuable medicinal qualities, tempts us to destroy the tree for the sake of the bark! The wood is generally used for the same purposes as that of the White or common Elm; but neither of them possesses any great value. The flowers are expanded before the leaves, in April, and by the end of May, or early in June, the fruit is ripe. The figure shows the flat, winged fruit, of the natural size, and a leaf reduced to one-fourth the natural size.

22. *Ulmus Americana*, of Linnaeus.—*American or White Elm*.

Though the American Elm is inferior to the European species in hardness, strength, and other useful qualities, yet it has its uses; and those who have seen it in its full growth under favorable circumstances, will readily agree with Michaux in ranking it as "the most magnificent vegetable of the temperate zone." It is therefore for its elegant and stately qualities as an ornamental tree that this species of Elm demands our care and attention. No one can visit New Haven, in Connecticut, without being fully impressed with the grandeur of this noble forest tree, nor without a degree of thankfulness and gratitude to those high-minded and generous men who, long ago, by their care and fore-

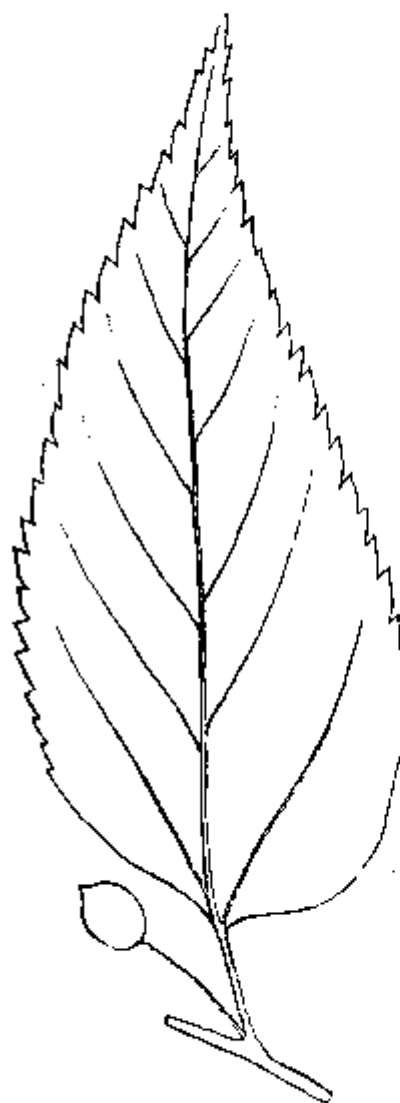
thought have secured for us the means of enjoying its deep and grateful shade, and its magnificent appearance to the eye.

What these men have done for New Haven, let us hope the people of our State will do for the hundreds of towns and villages now just springing, as if by magic, into healthful and vigorous existence. Much of the interest we feel on visiting the old New England towns, is derived from the rows and groups of fine large Elms, with their light and graceful, often drooping branches, spreading to a great distance from the trunk.

The "Great Elm Tree" on Boston Common attracts the attention of every one who visits that delightful spot in the midst of a dense population. It is cherished as a sacred relic by all true-hearted Bostonians—an iron fence protects it from all others. It has recently been figured and fully described by Dr. John C. Warren, whose residence on Park street fronts directly towards the tree. His little work on the subject is full of interest. Many historical associations are connected with the "great tree;" and its age is ascertained to be such that it is supposed to have been in existence longer than Boston itself. Of all the native trees that witnessed the first settlement of the city, this one alone remains. At one foot above the ground it is 22 1-2 feet in circumference; the first branch is 18 1-2 feet above the ground; the whole height is 72 1-2 feet; and the extremities of its branches cover an average diameter of over 100 feet. But this is not the largest Elm tree known in the country. Let us reflect, when transplanting to our public and private grounds the small sapling, bereft of its beautiful head and robbed of its life-giving roots, that *if we succeed* in making the bare pole grow at all, it may have a history as interesting and may attain an age and dimensions equal to the Great Tree on Boston Common.

Fortunately the Elm is very tenacious of life, and will in most cases withstand the careless mode of transplanting usually adopted. When its branches are shortened, it sends forth long and vigorous shoots, lined with dense rows of leaves. It is also of rapid growth—assuming when quite young its characteristic lightness, elegance, and graceful beauty. The comparative uselessness of the Elm is in its favor as an ornamental tree, and

often causes it to be preserved, when farms are cleared, for the purposes of shade, being, as one is often told, "good for nothing else."



HACKBERRY.

The flowers appear in May, and the seeds are ripe early in June; they may be then immediately planted. But, the tree is so common in our forests, of all stages of growth, that abundant supplies of young, healthy, and vigorous trees may always be obtained without resort to the seed, or any other mode of propagation. The growth, under favorable circumstances, will be about half an inch in diameter each year.

There is one other species of Elm, first noticed and described by Mr. David Thomas, of New York, and hence named Thomas' Elm, (*Ulmus racemosa*, Thomas,) which may probably hereafter be found in Wisconsin. It is usually confounded with the other kinds, but may always be known by the flowers, which are on pedicels arranged in the form of a compound raceme. The branches are mostly covered, or winged, with a corky excrescence. In other species the flowers are in small clusters, and nearly sessile.

23. *Celtis occidentalis*, of Linnæus.—Hackberry.

This tree belongs to the South, and occurs so rarely in Wisconsin as to be but seldom noticed. I have found it, however, at Milwaukee, on Rock river, and at Fond du Lac; always on low bottom lands along the margin of the streams. In general appearance it much resembles the Elm, and is often, doubtless, mistaken for that tree by casual observers. The least examination, however, will show marked differences—especially in the fruit, which is a drupe or berry, that may be eaten. There is some confusion in regard to the different species of *Celtis* growing in this country; but there are probably five species. A further examination and comparison of specimens is needed to clear up the difficulties.

There is a species in Europe, said to be very useful, the wood being only surpassed by the ebony and box in durability, strength and beauty. But the American kinds do not appear to possess those desirable qualities. Very little, however, is certainly known in regard to the value of the Hackberry of this country. Its scarcity may be the only reason why it is not applied to many useful purposes, for which, upon trial, it might be found well adapted. It is said to grow rapidly; to form a handsome tree; and that it might be used as a shade tree, in many situations where variety is desirable.

The figure shows the leaf and berry, both of the full size of nature.

ORDER VII. PLATANACEÆ.—THE PLANE TREE FAMILY.

24. *Platanus occidentalis*, of Linnæus.—Sycamore—Button-Wood.

At the east, this tree, with its white bark and broad leaves, is called Button-wood, while at the west it is almost universally known as the Sycamore. Its proper name, however, is the American or Western Plane Tree.

In Europe, a species of Maple is called Sycamore, and the use of the same name here for a very different tree, is apt to lead to confusion. The south part of Wisconsin is the extreme north.

ern limit of the Sycamore. It attains its greatest dimensions in the valley of the Ohio river. The low bottom lands of that stream, annually overflowed with water, appear to be the proper *habitat* of this tree. Until the discovery of the immense coniferous trees of California and Oregon, the Sycamore was regarded as the largest tree in the United States—attaining a circumference of 47 feet.

The wood is used for cabinet work; the grain is irregular, giving it a fine appearance when polished. It would be much more extensively used for this purpose, but for the abundance and cheapness of other more esteemed kinds. It is becoming a very common shade tree along the streets of the eastern cities and towns, and appears to be much admired. The growth is rapid; it bears transplanting well; and for supplying the prairie lands with fuel, shade, etc., in the shortest time, it is said to be inferior only to the Locust. As the Sycamore is not attacked by the borer, it may be deemed the most valuable of the two for this purpose. It may be propagated by sowing the seed in the spring, or by cuttings. The very young seedlings should be protected from the heat of the sun.

ORDER VIII. JUGLANDACEÆ.—THE WALNUT FAMILY.

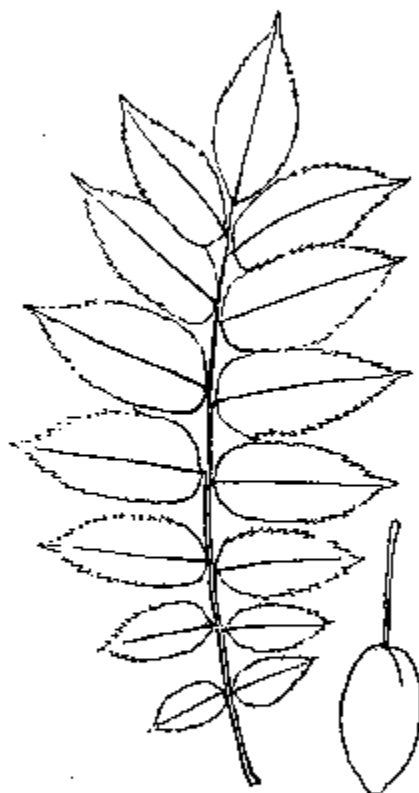
25. *Juglans cinerea*, of Linnæus.—Butternut—White Walnut.

The Butternut is far less common in the woods of this State than the Black Walnut, next to be noticed, and its wood is less valuable. It has, however, some very desirable qualities, rendering it worthy of attention. It is useful on account of the medicinal virtues of the bark; and the sap affords an inferior kind of sugar. The nuts should be gathered for pickling, in the last week of June; and for winter use, in September. This is the appropriate and agreeable business of the boys, who can thus supply themselves and their friends with luxuries at the same time that they are having a "fine time" in the woods. The nuts are much esteemed, and command a good price in the shops. The forms assumed by the Butternut tree are usually not those of beauty, being ill-shaped and uncouth. It is, therefore,

seldom used as an ornamental tree alone. When planted with other trees, it gives interest by contrast to the whole. The wood is very durable, and may be advantageously employed for posts, rails, sills, shingles, and other things that are to be exposed to the weather.

The figure represents a leaf and the fruit, both reduced to one-fourth the natural size.

26. *Juglans nigra*, of Linnaeus.—Black Walnut.



WHITE WALNUT.

This very common, well known, and valuable tree abounds in the eastern parts of Wisconsin, or in those portions of the State that are "heavily timbered." Large numbers are annually cut into logs, and used for cabinet-work, and for the inside work of houses. Like the Butternut, the wood of this tree is durable, and may be used for posts, rails, etc. Fence posts are known to have retained their strength for twenty-five years. The nuts are usually deemed

inferior in delicacy of taste to the Butternut.

As an object of beauty for the adornment of our houses, public grounds, streets, etc., this tree cannot be too highly esteemed. On this point no one is better authority than the late lamented Downing, who says: "When full grown, it is scarcely inferior in the boldness of its ramifications, or the amplitude of its head to the Oak or the Chestnut; and what it lacks in spirited out-

line when compared with those trees, is fully compensated, in our estimation, by its superb and heavy masses of foliage, which catch and throw off the broad lights and shadows in the finest manner. When the Black Walnut stands alone, or on a deep, fertile soil, it becomes a truly majestic tree; and its lower branches often sweep the ground in a pleasing curve, which gives additional beauty to its whole expression. It is admirably adapted to extensive lawns, parks and plantations, where there is no want of room for the attainment of its full size and fair proportions. Its rapid growth and umbrageous foliage also recommend it for public streets and avenues."

The flowers expand in May, but the fruit is not ripe until October. Young trees may be transplanted from the woods, or they may be grown readily from the seed.

27. *Carya alba*, of Nuttall.—*Shag-Bark Hickory*.

The Hickories were first separated from the Walnut, and a new genus established to receive them by Mr. Nuttall. Formerly they were all included in the old genus *Juglans*; but the least examination of the outer covering of the seeds or nuts will show the propriety of the new nomenclature. In the Walnuts it is undivided and remains attached to the nut, while in the Hickories it is divided into four valves and falls away when ripe.

The Shag-bark Hickory may be readily distinguished from the other Wisconsin species by the loose, scaly exterior bark. It is one of our most valuable trees; especially for fuel, for which purpose it is not exceeded in value by any other. As the result of careful experiment, it is found to yield twice as much heat per cord as the Red Maple, White Birch, Butternut, and Pine; and one half more than the Sugar Maple, Beech, Red Oak, Pin Oak, and Elm. The great strength and elasticity of the wood make it desirable for a great variety of purposes.

The Hickory is also a very fine ornamental tree, that should be much more often seen about our houses and public grounds. The difficulty of transplanting it, is probably the principal reason why it is not more often used for such purposes. It grows very rapidly from the seed, and one could very soon obtain a

supply by planting at the places where the trees are to grow. The flowers are out in May, and the nuts are ripe in October.

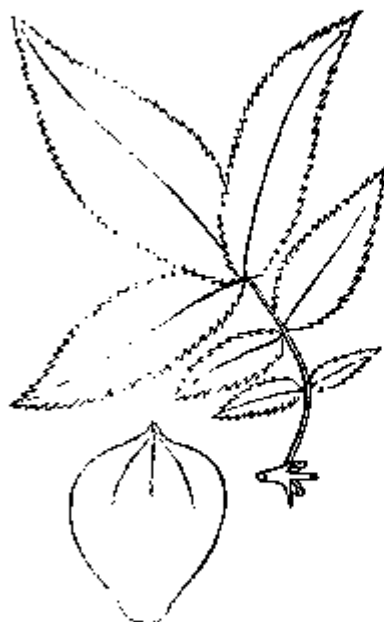
28. *Carya glabra*, of Torrey.—*Pignut Hickory*.

This very common species of Hickory was described by Michaux, under the name of *Juglans porcina*, but the specific name *glabra*, having already been given to this tree by Dr. Muhlenberg of Pennsylvania, must, in accordance with the just rules

adopted among authors, be restored to it. While it falls but little behind the last species in value as fuel, it possesses some qualities in which it is the most useful of the two.

Both are quite abundant in our State, not only in the thickly wooded districts, but extending into the openings, forming what are often known as "Hickory groves." Like the common Hickory-nut the flowers appear in May, and the nuts ripen in October.

The figure shows the fruit of the full size, and a leaf reduced to one half the natural size.



PIGNUT HICKORY.

There are four other species of Hickory found in the neighboring States, but not yet detected in Wisconsin.—They are

1st. *C. sulcata*, Nutt.—Thick Shell-Bark Hickory, found in Ohio. It resembles the *C. alba*.

2d. *C. tomentosa*, Nutt.—The Mockernut, or Great Ohio Walnut, which is found in Ohio and in Illinois.

3d. *C. amara*, Nutt.—Bitter-Nut, known as its name implies, by the bitterness of the nut, by its thin shell, etc., found also in Ohio and Illinois, and

4th. *Q. oliviformis*—The Pecan-Nut, which is found in the southern part of Illinois.

ORDER IX. CUPULIFERÆ.—THE OAK FAMILY.

29. *Quercus macrocarpa*, of Michaux.—Bur-Oak.



BUR-OAK.

The Bur-Oak is readily known from all other species in the State by the mossy fringe around the border of the acorn cup. The leaves much resemble those of the next species, though usually narrower, and of a much brighter and more silvery color below. A very common tree in the woods, and forming most of the "openings." When growing separate from other trees, the branches spread in every direction, forming large rounded heads, and giving these openings the appearance of an overgrown orchard. It is the best of the oak family for fuel.

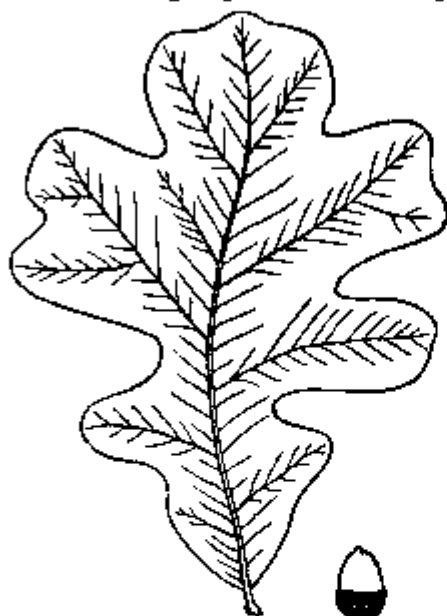
30. *Quercus obtusiloba*, of Michaux.—Post Oak.

The leaves of the Post Oak are downy below, pale and rough above, sinuately cut into five to seven roundish divergent lobes, the upper lobes much the largest, and often with one, two, or three notches. The acorn is ovoid, about twice the length of the hemispherical cup. This tree is rare in Wisconsin.

Its durability, when used for posts, has given it the name of Post Oak. The wood is valuable—almost equal, in some respects, to the White Oak.

31. *Quercus alba*, of *Linnaeus*.—*White Oak*.

This species is known from the others by its light colored bark, (whence the name;) the leaves are smooth, pale or glaucous below, bright green above, obliquely and deeply cut into (from three to five) oblong-linear entire obtuse lobes. The acorns are oblong, and much longer than the hemispherical cup. This is the most valuable of our oaks, and at the same time one of the most abundant.—Next to the White Pine it may be regarded as the most useful of our native forest trees. The hardness, strength and durability of the wood make it the most suitable for ship-building, and for all structures where strength is required.



POST-OAK.

32. *Quercus prinus*, of *Linnaeus*.—*Swamp Chestnut Oak*.

The leaves resemble those of the Chestnut tree, (whence the name,) being obovate, acute, downy beneath, coarsely serrate, with nearly uniform rounded teeth; not lobed. The acorn is large, in a somewhat top-shaped cup. This is quite a rare tree in Wisconsin.

33. *Quercus bicolor*, of *Willdenow*.—*Swamp White Oak*.

Resembles the White Oak, but is only found along the borders of marshes or wet grounds. It may always be known by its oblong or obovate leaves, coarsely and irregularly sinuate-toothed, but not lobed; they are wedge-shaped below, and on short

stalks. This species is not very abundant in the State. For many purposes the wood is equal to that of the White Oak.

34. *Quercus coccinea*, of *Wangenheim*.—*Scarlet Oak*.



WHITE-OAK.

So named on account of the beautiful scarlet color the leaves assume in autumn. The general outline of the leaf is oval, deeply sinuate-pinnatifid, with broad and open sinuses, reaching two-thirds the depth to the mid-rib, smooth, bright green and shining on both sides, broad and truncate at the base. The acorn is globular-ovoid, about one-third hid in the very scaly cup. This fine tree is rare in Wisconsin. It was first detected near the farm of Mr. Huntington, in the eastern part of Dane county.

The wood of the Scarlet Oak is inferior to that of most of the species. As an ornamental tree it has few superiors.

35. *Quercus rubra*, of *Linnaeus*.—*Red Oak*.



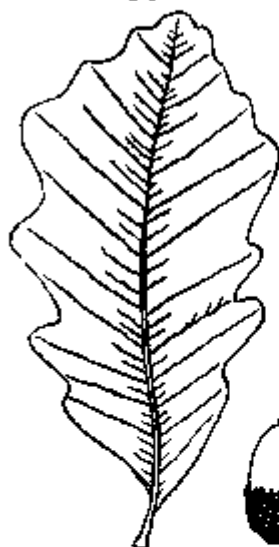
The leaves of the Red Oak are obovate in outline, smooth, pale below, sinuately cut, with rather narrow sinuses into short, acute, spreading lobes. The acorn is oblong-ovoid, much longer than the flat, saucer shaped cup. It is probably the most abundant species, especially in the thickly-wooded districts of our State.

It is the least valuable of our native oaks, for the purposes of timber, or of fuel. For ornamental purposes it is deserving of some attention. It grows readily and rapidly, in almost any situation, and assumes a form of much beauty.

SWAMP CHESTNUT-OAK.

38. *Quercus palustris*, of Du Roy.—Pin Oak.

This is our most beautiful and graceful oak tree. The leaves are oblong, smooth, shining, bright green on both sides, standing on long petioles, so that they are wafted about by every wind



SWAMP WHITE-OAK.



that blows. The sinuses of the leaves are very broad, deep and rounded, the lobes divergent, acute, cut-lobed and often toothed. The acorns are small, nearly globular, about half covered by the cups. The bark is black, and much cracked into little irregular squares. The Pin Oak (often improperly called Black Oak) is quite common, especially in the borders of prairie openings.

The following species of oak are found in neighboring States, and some of them may, therefore, be looked for in Wisconsin:

Quercus oliviformis, Michx.—Mossy over cup Oak.

Q. castanea, Willd.—Chestnut Oak.

Q. prinoides, Willd.—Dwarf Oak.

Q. imbricaria, Michx.—Laurel Oak.

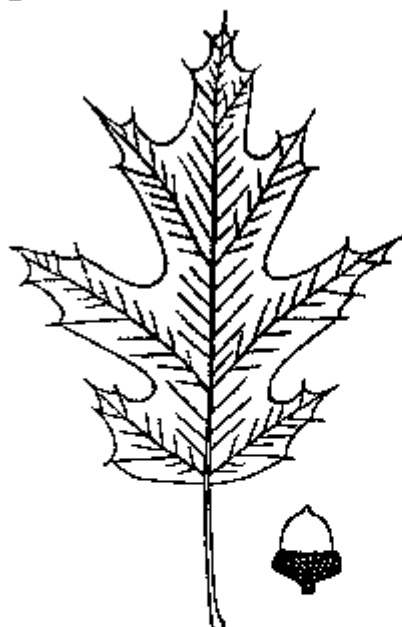
Q. nigra, Linn.—Black Jack Oak.

Q. tinctoria, Bart.—Black Oak.

Q. jeana, Nuttall.—Lea's Oak.

The oaks are not only among the most useful, but they are also among the most ornamental of the native forest trees. In their young state they have the properties of lightness and elegance; at greater maturity they possess majesty and even grandeur. In the close woods they do not naturally show their full and proper development, on account of their crowded condition. But in the oak openings we see them with spreading arms, shading a large extent of ground and presenting beautifully rounded forms to the eye. The foliage of the pin-oak is peculiarly light,

beautiful, and ever moving. The silvery under surface of the large leaves of the burr-oak is turned up by a gentle wind, and gives its brilliant hues to the landscape.



SCARLET OAK.

It has been recently stated (with how much truth I know not) that acorns should be planted on the surface of the ground. They should be covered with leaves, held down by small stones. The oak trees cannot be transplanted without great care and skill; but their growth from the seed is quite rapid. They spring up naturally whenever the annual fires are kept from spreading over our prairies and openings, and soon form dense woods.

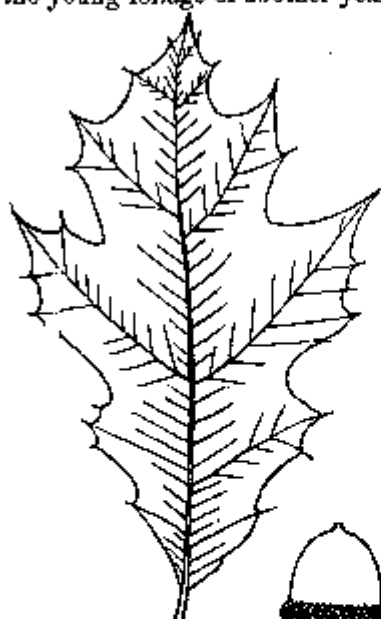
The illustrations of the oaks are one half the natural size.

37. *Fagus ferruginea*, of Aiton.—*American Beech*.

Like many other species of plant, the American Beech tree has been supposed to be only a variety of the European kind; but later botanists have decided that the two are distinct. Michaux describes two varieties, and makes them different species—the white and the red. The first is nearly all sap-wood, which is white; the last nearly all heart-wood, which is red. But these peculiarities are found to be owing to something in the soil or exposure; there being no sufficient botanical differences to enable us to distinguish the two kinds as separate species.

In our State, the Beech is confined to certain districts along the shores of Lake Michigan, where it is often found constituting almost the entire forest. I am not informed in regard to the occurrence of this tree in the northern part of the State.

In the spring the young Beech trees, and the lower branches of the older ones, are covered with dead leaves of the last year's growth. These old leaves remain until they are crowded off by the young foliage of another year. The tops of the larger trees are usually bare of dead leaves.



RED OAK.

In the books we may read the following directions for the cultivation of the Beech from the seed, that being the mode usually adopted: "Shake the nuts from the tree as they ripen, dry them in the sun, or in an airy shed or loft, after which they may be mixed with sand that is perfectly dry, at the rate of three bushels of sand to one of mast, which only retains its vital properties for one year. Sow the seed one inch apart, in March, in a light rich soil, and cover them about one inch; the tender young plants will appear in May, when, if the

season is dry, they should be moderately watered. In March, the next season, with a spade made very sharp for the purpose, undermine the roots and cut them between four and five inches under the ground. After the plants have stood for two years, or, if in poor soil, three years, they may be transplanted, and in three or four years removed to general plantation."

Between Ghent and Antwerp, in Belgium, there were formerly, if not now, very solid and elegant hedges, made of the Beech; and while we are seeking for the best hedge plant, it might be well for some person, or some Agricultural Society, to try what can be done with the American Beech. The young trees are placed eight inches apart, and bent in opposite directions, so as to cross each other with small apertures. They are bound together at the points of intersection, where they soon grow to-

gether. After the young plants are well established they bear the knife well, and do not sprout up from the roots as vigorously as other trees. In exposed situations on the prairies, barriers of this kind should be formed along the north and north-west bor-



PIN OAK.

ders of gardens, building-lots, barn-yards, etc. For such purpose the Beech will answer better than any other tree, excepting the evergreens. The wood of the Beech is applied to many useful purposes, and would be much more used were it not for the abundance of other kinds afforded by the forests of our country. As an ornamental tree, the beech is no great favorite, though in its young state especially,

it is a handsome tree. For its density of shade, the clean and neat appearance of its bark, its bright shining leaves, its slender and elegant branches, this tree is certainly worthy of the attention of the landscape gardener. We are too apt to judge of the characteristics of a tree from its appearance in the dense forests, where it has not room to spread, rather than when growing in an open space, where it could display all its beauty.

There are two varieties of the European Beech well worthy of cultivation in Wisconsin. They are known as the Purple Beech, and the Weeping Beech.

38. *Carpinus Americana*, of Michaux.—*Hornbeam*, *Water Beech*.

This is a small tree, found abundantly almost everywhere in the American forests. It has several names by which it is known in different parts of the country—among them are Hornbeam, Hop-horn-beam, Iron-wood, Blue Beech, Water or Swamp Beech, etc., etc. Some of these names are also applied to the next species. The bark has some resemblance to that of the Beech

tree in its color and smoothness. The Hornbeam prefers rich damp soils, near swamps, on river bottoms, etc.

Professor Emmons, in his report on the Trees and Shrubs of Massachusetts, a work of great interest and value, says of this small tree, that "it is of slow growth, and is supposed to live to a great age. The wood is white, close-grained and compact, and has great strength. It is used for beetles, levers, and for other purposes where strength and solidity are required; and it is well fitted for the turner. The corresponding species in Europe is much esteemed as fuel, and in France its charcoal is preferred to most others. The Hornbeam is a tree of considerable beauty. Its smooth, fluted trunk is an interesting object to one curious in forest history; its foliage is remarkable for its softness, and the fruit is unlike that of any other tree. The crimson, scarlet and orange of its autumnal colors, mingling into a rich purplish red as seen at a distance, makes it rank in splendor almost with the Tupelo and the Scarlet Oak. It is easily cultivated and should have a corner in every collection of trees."

One of the European species (*C. betulus*, Linn.) is well adapted by its mode of growth for garden hedges.

39. *Ostrya Virginica*, of Willdenow.—*Ironwood*.

Like the last, this small tree has received different names, and by some the name of Ironwood is applied to both; though no two trees could well be more distinct. They may be known at once by the bark, which in the Hornbeam is smooth and gray like the Beech, but in the Ironwood is brown and rough, being much furrowed and loosened. But they may be still more readily distinguished by the fruit. The Hornbeam has a naked nut concealed in the axil of a leafy scale or bract; while the Ironwood has the nut covered by a kind of bladder-like hairy sack.

The wood of both is very hard, strong and rigid, answering well for handspikes and other purposes where strength is required—thus giving propriety to the name of *Ironwood*. But, for the sake of distinction, it is proper to confine this name to the species now under consideration.

The tree soon dies when the surrounding forest trees are cleared away, leaving the Ironwood alone. Hence, it has no value for ornamental purposes.

ORDER X. BETULACEAE.—THE BIRCH FAMILY.

40. *Betula papyracea*, of Aiton.—*Canoe, or Paper Birch*.

These names indicate the uses to which the bark of this species of the Birch family is applied. It is used extensively by the aborigines, and by the fur traders, for making their light and elegant canoes; and when peeled off in thin layers, it is a substitute for paper. This bark is also used for many other purposes of ornament and utility; the white man makes use of it for the roof of his rude building, erected at the time of the first settlement of the country, and it is found to be effective in keeping off the rain, as well as the heat in summer and the cold in winter.

With the Indians it constitutes an important material in the construction not only of his means of transportation on the water, but of his wigwam and various utensils. Sir John Richardson observes that it "is an invaluable tree to the population of Ruperts' Land; its bark is indispensable for the construction of their canoes, and also serves for the covering of tents, in localities where the skins of large animals are scarce. Neatly sewed and ornamented with porcupine quills, it is moulded into baskets, bags, dishes, plates, and drinking vessels; in short, it is the material of which most of the light and easily-transported household furniture of the Ojcees is formed. The wood serves for paddles, the frame-work of snow-shoes, sledges, etc. In the spring the sap forms a pleasant sweet drink, from which a syrup may be manufactured by boiling."

The Canoe Birch does not extend south into Illinois, but in the opposite direction it is found as far as the 69th degree of north latitude. It attains its greatest perfection about the shores of lake Superior, where the bark is used by the Chippewas for most of the purposes above indicated.

The following lines from Mr. Longfellow's *Hiawatha*, are interesting, and show how this tree is treated:

"With his knife the tree he girdled
Just beneath its lowest branches,
Just above the roots he cut it,
Till the sap came oozing outward:
Down the trunk from top to bottom
Sheer he cleft the bark asunder,
With a wooden wedge he raised it,
Stripped it from the trunk unbroken!

With this he made a canoe, which

—————"floated on the river
Like a yellow leaf in autumn,
Like a yellow water lily."

41. *Betula excelsa*, of Aiton.—*Yellow Birch*.

This tree is found in the northern and central portions of the State, though much less common than the last, and its bark has none of the more useful qualities of that species. It may be known by the sweet or aromatic taste of the young twigs, and by the bark, which is more rough, of a yellowish color, and does not peel off in thin layers. Emerson says of this tree, that "it has not often been cultivated for ornament, but it has great beauty. In traveling, we sometimes see it on the edge of a wood, with its abundant, soft, green, often drooping foliage, between masses of which is seen the gleam of the light bronze trunk with its silver and pearly lustre—showing what might be its effect if introduced in ornamental woods. The wood of this tree is applied to numerous uses. Bending readily, it is particularly adapted to the making of the posts and bars of chairs. It is used for the staves of small and inferior casks, for boot-trees and for joists and bedsteads. It is valuable as fuel."

ORDER XI. SALICACEÆ.—THE WILLOW TRIBE.

42. *Salix discolor*, of Muhlenberg.—*Glaucous Willow*.

This small tree or large shrub is very common about wet springy places in Wisconsin. The leaves are broader in proportion than most of the willows, and are whitish-glaucous beneath. The scales of the catkins are oblanceolate, hairy, acute; the ovaries densely silky. The swelling of the catkins gives us the earliest indication of the approaching spring.

43. *Salix lucida*, of Muhlenberg.—*Shining Willow*.

This beautiful and very common Willow may be regarded, in many instances, as a small tree. It may be distinguished by the leaves, which are smooth and shining on both sides, giving name to the species; they are ovate-oblong, or lanceolate and narrow, with a long tapering point; serrate on the margin. The catkins are large, and of a bright yellow, appearing early in the spring. It grows on the borders of rivers, lakes and marshes; indeed, on all moist grounds. The branches are brittle, and therefore not suited for the purposes of the basket-maker.

44. *Salix fluviatilis*, of Nuttall.—*River Willow*.

This Willow was first described and distinguished from the long-leaved Willow, (*S. longifolia*, Muhl.,) in the first volume of his North American Sylva. It is often only a low shrub along the margin and on the islands of the Mississippi river. It is one of the most abundant trees along the principal rivers of the west. It is the first to take possession of the loose sand bars when left dry by the retiring waters, and hence it is often called "Sand-bar Willow." It is to the light, feathery foliage of this abundant tree that the upper Mississippi owes much of its beauty. The roots do not seem to penetrate the soil in such numbers as to prevent the wear of the rapid current of the river. The wood is used as fuel on board the steamboats now so numerous on the great Father of Waters, but does not seem to possess much value.

The figure represents a leaf, the capsule when mature, and also after it is open, showing the cottony seeds.

RIVER WILLOW.

45. *Populus tremuloides*, of Michaux.—*American Aspen*.

This tree is small and more curious than useful; the curiosity about it consisting in the constant tremulous motion of the leaves, which are set on slender, flattish petioles, so as to be moved by the gentlest breath of wind—as some rascally poet says,

"——— like women's tongues
Which seldom cease wagging!"

The soft light wood of the Aspen has too little strength to be of any utility. The tree is usually found bordering the woodlands and in small patches along the margin of the prairies. It is quite an abundant tree in Wisconsin, never however attaining any considerable size. The wood may be used as fuel where no better can be obtained, and the ashes are said to afford an unusual quantity of potash.

46. *Populus grandidentata*, of Michaux.—*Large Toothed Poplar*.

This Poplar takes its name from the coarseness of the teeth of the large roundish ovate leaves, by which it is readily distinguished from the last. It grows in the same localities and is often confounded with it by careless observers; but the slightest comparison of the leaves will show the difference between the two. Like that, its wood is light, soft, and easily broken. It is used for fuel, but is of inferior quality; when dry it burns rapidly, but affords little heat. This species of Poplar attains the greatest size—and is used for rails, timber, etc. It is said to be more durable than the other kinds of Poplar.

47. *Populus angulata*, of Aiton.—*Angled Cotton-Wood*.

This is the common Cottonwood of the Mississippi river and its tributaries, but as this name has been applied to other sorts of Poplar, it loses its distinctive signification. The cottony down accompanies the seed of all the Poplars, but perhaps more abundantly in this than the others. The seeds are very numerous, and are floated down the rivers, mixing with the sediment that

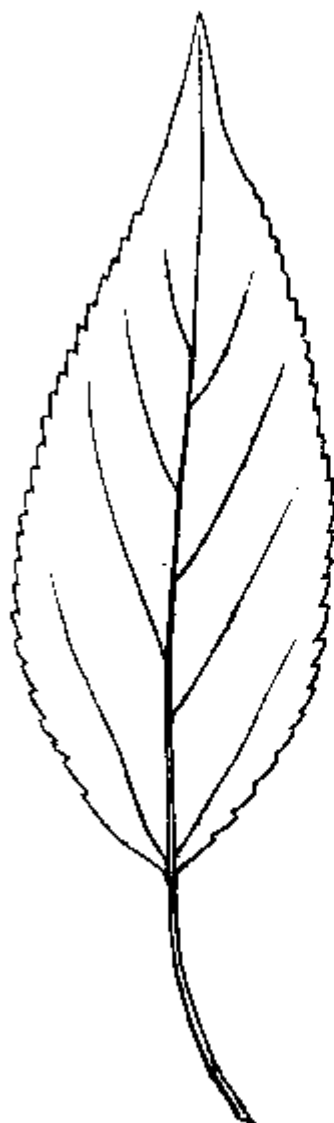
covers the banks and bars, so that these places when left bare by the fall of the waters, are soon covered with a growth of

young Cottonwood. The seeds are so durable, when thus deposited, that when brought up from great depths they still possess the power of germinating.

There are other kinds of Poplar with angular stems, but they are distinguished from the present species by having resinous and aromatic buds, like the Balsam Poplar, and the Balm of Gilead Poplar, while the buds of this species are destitute of aromatic gum. The wood is soft, white, and has but little value; though it is used with other wood by steamboats on the Mississippi river. The angled Cottonwood does not appear to extend up the Mississippi river beyond Lake Pepin.

48. *Populus balsamifera*, of Linnaeus.—*Balsam Poplar*.

Milwaukee is just on the southern limits of this tree; only a few small specimens having been observed on the lake and river banks near that city. It is more abundant in the northern portions of the State. It resembles the next species in the agreeable odor of the buds in the spring, but wants its vigorous growth, and great size; and the leaves



BALSAM POPLAR.

are much smaller and narrower. Like most of the Poplars, the wood possesses very little value, in the arts of life. The figure represents a leaf of the natural size.

49. *Populus candicans*, of Aiton.—*Balm of Gilead Poplar*.

This is a favorite ornamental tree, both on account of its beauty as a tree, and of the fragrance of its opening buds in the spring, from which it derives its common name. It grows naturally along the margin of lakes and rivers in Wisconsin, whence it may be obtained and transplanted to the place it is intended to adorn. It is very hardy, and will continue to grow, under very bad treatment—an essential quality in most cases! The large leaves give it a coarse appearance to the eye, but cause a very dense shade. It is of rapid growth—and should be more often seen in the streets of our cities and villages.

DIVISION IV,—GYMOSPERMS.

ORDER XII. CONIFERÆ.—THE PINE FAMILY.

50. *Pinus Banksiana*, of Lambert.—*Gray Scrub Pine*.

The dells of the Wisconsin River is about the extreme southern limit of this arctic species of Pine, which extends thence farther towards the north pole than any other tree. It may be distinguished by the slightly curved cones with pointless scales; the short rigid spreading leaves, arranged in pairs in the sheaths, not more than about an inch in length. The tree is only from ten to twenty feet in height, and is of little or no value, except perhaps for ornamental purposes.



GRAY SCRUB PINE.

The figure represents a cone and the leaves, of the natural size.

51. *Pinus resinosa*, of Aiton.—Red Pine.

This is a large tree, the bark smoother than in the White Pine, the leaves more rigid, and the cones shorter and more solid. The leaves are in pairs each one half round, starting from long sheaths at the base. The cones often grow in bunches, are egg-shaped about two inches long, their scales without points are widened in the middle. The leaves are five or six inches in length. By these characteristics the true Red Pine, which is often called by other names, may be distinguished. It is a very valuable tree, often found growing with the other species of Pine, on the dry sandy ridges in the northern and central portions of the State. It takes its name of Red Pine from the color of the bark which has a deeper red than any other species. One name often given it, Norway Pine, is very improper, as it is entirely unlike the tree known in Europe by that name. The flowers appear in the spring, and the cones come to maturity at the end of the second season.

52. *Pinus mitis*, of Michaux.—Yellow Pine.

This tree is common about Green Bay, and on the bluffs of the Lower Wisconsin river, which may be regarded as the southern geographical limits of the species in this State. A few trees were recently (perhaps still) growing on a bluff of sand-stone, ten miles west of Madison. But at the south this tree is abundant. It is valuable for lumber, timber, etc., but inferior to the White Pine, and far less common. From the Red Pine, which the present species most resembles, it may be known by the leaves, which are more soft and slender, and are channelled; the scales of the cones, slightly enlarged at the end, and tipped with a minute weak prickly point.

The names of white and yellow, applied to the Pines, have reference to the color of the wood.

53. *Pinus strobus*, of Linnæus.—White Pine.

This is the common Pine tree from which most of the lumber is manufactured in the central and northern portions of Wisconsin.

sin, to supply the southern part of the State, Illinois, Iowa, Missouri, etc. It is undoubtedly the most valuable tree for this purpose in our forests. The southern limits may be regarded as on a line extending from the Sheboygan river to the north end of Lake Winnebago; thence to the falls of the several larger rivers to those of the St. Croix. There are also pineries on the head waters of the Lemonnier, and of the Baraboo.

The White Pine is easily distinguished from all the others by having five leaves together in each sheath; and by the long slender cones. Trees have been measured over two hundred feet in height, and in Wisconsin they tower high above all the other trees of the forest.

The flowers of the White Pine appear in May, but the seeds do not ripen until October of the next year. They may be gathered at any time during the next winter. The trees have an annual growth of about half an inch in diameter.

The pollen of the pine tree is produced in great quantities, so as to be blown about by the winds, producing what has been supposed to be showers of sulphur. These minute grains fall into the waters of the great lakes, where they excite the wonder of the sailors, who suppose them to be "the impurities of the waters working themselves out!"

54. *Abies balsamea*, of Marshall.—*Balsam Fir*.

This very fine tree is found only in the northern part of the State, extending south in the vicinity of Lake Michigan, only as far as the Manitowoc river. The Fir and Spruce trees differ from the Pines in the manner of growth of the leaves, which are scattered singly on the branches instead of being collected into bunches of from two to five from the same base. The resin of the present species is known as Canada Balsam, much used in medicine; and it has lately been employed by microscopists to give transparency to various objects under examination; also as a varnish.

This tree is used only for ornamental purposes, not attaining sufficient size to be of much value for the ordinary purposes of timber, etc.,

Mr. Downing recommends it as one of the most ornamental of our native evergreens, and especially for planting near the house. When standing singly, it forms a perfect pyramid of fine dark green foliage, thirty or forty feet high, regularly clothed from the bottom to the top. However small the plants may be, still they are interesting, as they display the same symmetry as full grown trees.

Hundreds of these trees are annually brought from the north and set out in the vicinity of our larger towns, and in Illinois; but most of them are unable to survive the bad treatment they receive. It is very hardy, of quick growth, and should be more often seen in our yards and ornamented grounds. With proper treatment the tree will increase in diameter more than half an inch by the growth of each year.

55. *Abies Canadensis*, of Michaux.—*Hemlock*.

This tree does not extend north of latitude 49°, and south of Manitowoc in latitude 44°. The bark possesses more value than any other part of the Hemlock, and large quantities are annually stripped off for the use of the tanner. The young boughs are used to supply a soft bed for surveyors and others exposed to the hardships of a "life in the woods."

The wood is much less valuable than Pine, though often used for joists, flooring, etc. It is a very elegant and highly ornamental tree, with long, gracefully-drooping branches, and light tufted foliage.

The Hemlock is said to be but little injured by the pruning knife, and therefore makes a good hedge plant. By being planted in double or tripple rows, it forms in a few years an impenetrable evergreen wall, which would be invaluable for shelter from the cold winds of winter.

When planted in localities south of its native country it is apt to become thin by the loss of the smaller branches and leaves. The wood is preferred to pine in cases where great strength and rigidity are required. Under favorable circumstances the annual growth of Hemlock is about half an inch in the diameter of the trees.

56. *Abies nigra*, of *Poiret*.—*Black Spruce*.

This is a dense, sombre looking tree, with blackish bark, hence properly named *Black Spruce*. For ornamental purposes, it should only be grown among other evergreens to give variety. For this purpose it possesses a peculiar value. It is found only in the northern part of the State, where it is not very abundant. But it forms a large proportion of the forests of some of the eastern States. The timber is valuable, being used for yard arms, keels, etc., of vessels; knees are made of the larger roots and a portion of the trunk. The wood is said to be equal in many respects to the best species of pine.

The cones are oval and are placed near, but not on the ends of the branchlets; the leaves are arranged in a spiral manner, running entirely around the stem; the bark is rough. The tree grows in the form of an elongated cone. The flowers are expanded in May; the cones ripen in November, but do not open to disperse the seed until the following spring. The wood increases in diameter about one third of an inch yearly. A kind of beer called spruce beer is made from the young shoots of this tree.

57. *Abies Alba*, of *Michaux*.—*White Spruce*.

A light, pretty species, with small ovate pendulous cones, placed on the extremities of the branchlets. The foliage is of a light bluish-green tint, contrasting finely with the darker color of the *Black Spruce*. Hence, it makes a very valuable ornamental tree. The wood also is valuable when it can be found of sufficient size. In Wisconsin it is confined to a few of the most northern counties. The roots are long, slender and flexible, and are used by the Indians as thread, with which to sew together their bark canoes.

The annual growth of the *White Spruce* is found to be about one-third of an inch in diameter; a tree thirty years old being about ten inches through, near the ground.

58. *Larix Americana*, of *Michaux*.—*Tamarack*.

In some States this tree is often called *Hackmatack*, which is probably only a corruption of the name by which it is now al-

most universally known. It is more or less common throughout the whole State, though rare in the south-western counties. It prefers wet grounds, which are not common in that part of the State.

The wood is very strong, hard, and durable, well adapted for posts, rails, poles, railroad ties, etc.

Foreign writers usually call this the American Larch, to distinguish it from the European species known by that name. That tree is of larger growth, and is much esteemed as a timber tree. It is also far superior to the Tamarack as an ornamental tree, the leaves being longer, and the beautiful red cones of much larger size.

On account of its valuable qualities, the growth of the Tamarack should be encouraged in Wisconsin. In waste places, too wet even for grass, it may be made to yield a good return for the little care and attention it will require.

59. *Thuja occidentalis*, of *Linnaeus*.—*American Arbor Vitæ*.

This very common evergreen tree is usually called White Cedar, a name that more properly belongs to another tree which does not occur in Wisconsin. It usually prefers wet grounds, and is found on the borders of Tamarack swamps, etc. Steep side hills, especially if wet, are often ornamented by this fine tree. The wood is durable, and used for fence posts, railroad ties, etc., where it is said to last two or three times as long as most other kinds of wood. It is a very valuable hedge plant, and especially for high screens to protect gardens, etc., from the cold winds. Being very hardy and easily obtained it will doubtless soon become more generally cultivated.

60. *Juniperus Virginica*, of *Linnaeus*.—*Red Cedar*.

The Red Cedar grows on the borders of small lakes and rivers, but not very abundantly in the southern parts of the State. At the north it is said to be more common. While most of the Junipers are low and scraggy bushes, this one attains the dignity of a tree. The excellent qualities of the Red Cedar makes us regret that it is not more common with us. The wood is strong

and very durable, consequently suited for railroad ties, and for other purposes where wood is exposed to the dampness of the ground.

Like several other evergreens, it has been recommended as a hedge plant and for screens against winds. The branches extend horizontally from near the ground, thus rendering the protection more complete.

When growing in its wild native places among rocks, and on steep side hills it is usually a ragged, poor shaped tree, the branches often much larger and longer on one side than on the other; but when growing singly it assumes a regular and very beautiful form. The fruit of the Red Cedar unlike that of the other evergreen trees is in the form of a berry instead of a cone. It ripens in October. The flowers appear in May.

The regret expressed by Mr. Downing, that the fine evergreen trees, both of this country and of Europe, which composed the Pine and Fir tribes had not received more of the attention of planters, would now in some degree be spared; for, through the influence of his own publications, increased attention has been given to the subject. He pleads eloquently for them: "It is indescribable how much they add to the beauty of a country residence in winter. At that season when, during three or four months the landscape is bleak and covered with snow, these noble trees, properly intermingled with the groups in view from the window, or those surrounding the house, give an appearance of verdure and life to the scene, which cheats winter of half its dreariness. In exposed quarters, also, and in all windy and bleak situations, groups of evergreens form the most effectual shelter at all seasons of the year, while many of them have the great additional recommendation of growing upon the most meagre soils."