

IV

NOVEMBER, 1860

(ÆT. 43)

Nov. 1. 2 P. M. — To Tommy Wheeler wood-lot.

A perfect Indian-summer day, and wonderfully warm.
72 + at 1 P. M. and probably warmer at two.

The butterflies are out again, — probably some new broods. I see the common yellow and two *Vanessa Antiopa*, and yellow-winged grasshoppers with blackish edges.

A striped snake basks in the sun amid dry leaves. Very much gossamer on the withered grass is shimmering in the fields, and flocks of it are sailing in the air.

Measure some pine stumps on Tommy Wheeler's land, about that now frosty hollow, cut as I judge from sprouts four years ago.

First the pitch pine: —

1	is	18½	inches	[in]	diameter	and	has	145	(?)	rings
2	18	"	"	"	"	"	137	"		
3	20	"	"	"	"	"	128	"		
4	21	"	"	"	"	"	148	"		
5	21	"	"	"	"	"	140	"		
6	22¾	"	"	"	"	"	160 + 4	(Counted the last		
								64 at home)		
7	20	"	"	"	"	"	167 or 168	(?)		
7)141¼						7)1026 + 4			

Average 20

Average 147 + 1, or 148

That is, they all together averaged in growth from

first to last about a fifteenth of an inch in a year. But they grew very slowly indeed for the last fifty or more years. They did nearly half (?) their growing in the first third of their existence. For example, (I measure now on that side where I counted, *i. e.* the broadest, so that my figures are not absolutely but relatively true), —

No. 2	grew	5 inches	in first	32 years					
5	"	4½	"	"	50	and 3½	in second	50	
6	"	7¼	"	"	50	"	2½	"	"
7	"	4½	"	"	50	"	2¼	"	"
		21½			182	3)8½		150	

A little more than ½ inch a year. Average ⅙ inch.

The 7th grew only something less than three inches (which was all of the sap) in the last sixty-seven or eight years, or one twenty-second of an inch a year only. Indeed, in one case, the 6th, the outside had grown only one and one fourth inches in sixty-four years, or about one fiftieth of an inch in a year, just one inch in the last fifty-three years, or one fifty-third of an inch a year, — equal to the finest scales. I should say that they averaged but one thirty-sixth part of an inch the third or last fifty years.

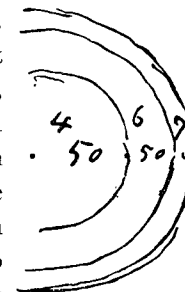
1st 50	2d 50	3d 50
½ inch	⅙	⅓

That is, their rate of growth the three successive periods of fifty years diminishes in geometrical progression, the quotient being two.

The seven pitch pine stumps measured on the 30th averaged thirty-four years and had grown a tenth of an inch in a year. This is a perfect and remarkable agreement, and quite unlooked for. They were a mile apart,

and I was not reminded of those previous measurements until I chanced to compare them afterward.

I may therefore take this to be [the] average growth of a pitch pine for the first fifty years. But I have not yet taken into the account the fact that, though the thickness of the layer is less, its superficies, or extent, is greater, as the diameter of the tree increases. Let us compare the three portions of wood. If the diameter at the end of the first fifty years is four, the second fifty, six, and the third fifty, seven, then the amount of wood added each term will be (to omit very minute fractions) twelve and a half, fifteen and a half, and ten respectively.¹ So that, though in the second fifty the rings are twice as near together, yet considerably more wood is produced than in the first, but in the third fifty the tree is evidently enfeebled, and it probably is not profitable (so far as bulk is concerned) to let it grow any more.



The very oldest trees whose rings I have counted (*i. e.* these pitch pines and the oaks on Eb. Hubbard's hill) grew thus slowly at last, which I think indicates that a tree has a definite age after which it grows more languidly or feebly, and thus gradually ceases to grow at all, — dies and decays. I should say that these pitch pines flourished till they were about a hundred years old, and that they then began to grow with less

¹ Or, actually averaging eight trees under Nov. 10th, it is 7, 10+, 10—.

vigor, though their old age (in this sense) might be a third or more of their whole life. Two or three more were dead or nearly dead when sawed four years ago, and I saw the rotted stumps of some others.

There were twenty or thirty of the pitch pines, — though I measured the largest of them, — and they were all but one or two perfectly sound to the core, and the inmost rings were the plainest. The sap was only from one and three quarters to three inches thick, and was the most decayed. (It was one and three quarters inches thick in No. 6.) The bark was generally from two to two and three quarters inches thick. This would have added four and three quarters to the average diameter of the trees, or made it twenty-four and three quarters. That is, where sawed off, which was rather low, or say eight to ten inches above ground.

There were also as many or more large white pines mixed with them. One of 24 inches diameter had 78 rings; second, 31 inches, 96 rings. Also one hemlock 21 inches, 81 rings. This had grown with remarkable equality throughout ¹ and was very easy to count. An oak (probably black), 14 inches, 94 rings.

About a hundred and fifty years ago, then, there came up in and around this hollow in the woods a grove of pitch pines. Perhaps some came up twenty or thirty years earlier, which have now died and decayed. When the first had grown for about sixty years, many white pines sprang up amid and under them, as we see happen to-day.

¹ And so it is generally.

I occasionally (or frequently) see white pines springing up in a sprout-land when other trees have failed to fill it up for some years.

No. 6, having 164 rings and having been cut four years, sprang up at least one hundred and sixty-eight years ago, or about the year 1692, or fifty-seven years after the settlement, 1635.

In another case I counted fifteen rings (with a microscope) within the last quarter of an inch, which was at the rate of one sixtieth of an inch in a year, — equal, I think, to the finest scales ordinarily used.

WHITE PINE WOODS

The small dense grove of Clark's (?), north of Boze's [*sic*] Meadow.

Near road, southwest of Tarbell's.

Abel Hosmer's, north and northwest of house.

Mason's pasture (south of this, younger white pine with cedars intermixed).

The Holden Swamp woods as seen from north (except southwest part).

Northeast part of Baker Farm, quite young.

Behind Martial Miles's, southwest of cold pond-hole.

East side Second Division Brook, very extensive.

I have seen that a great many pitch pine cones have been cut off this fall, but it chances that I have not seen where they were eaten or stripped. I conclude, therefore, that they must be collected into some hole in a tree or in the earth, — there can hardly be a doubt of this, — and possibly some are buried as nuts are. What stores of them there must be collected in some places now!

PITCH PINE WOODS

Young, north of Loring's Pond.

Just beyond Concord bound on right hand, this side Wetherbee's, extensive and large. (Farbell says that when he came to town in '26 these were just about as large as his now. Sixty to seventy years old, then.)

Heywood's small grove southeast of Peter's.

Large, southeast Copan.

Beyond Nathan Barrett's, both sides road, large.

Hill behind Abner Buttrick's.

Lane south of second Garfield house.

Southwest of Brooks's Pigeon-Place.

North G. M. Barrett's, by College Road.

Northeast of Sam Barrett's mill.

Northwest of Sam Barrett's mill, west of pond.

Nov. 2. P. M. — To D. Wetherbee's old oak lot.

As several days past, it has been cloudy and misty in the morning and fairer and warmer, if not Indian summer, in the afternoon; yet the mist lingers in drops on the cobwebs and grass until night.

HARDWOOD LOTS

Wetherbee's.

Blood's.

G. M. Barrett's hillside, behind house.

Walnuts (young) of Smith's Hill, Lincoln.

" " " Annursnack, above orchard.

" " Fair Haven Hill slope.

" " Also north side of path from Springs to bars.

" " site of Britton's shanty.

South side of Bear Hill, Lincoln.

Saw off a very large and old-looking shrub oak on a pitch pine plain, twelve or more feet in height and three and one half inches in diameter (the wood) at one foot from the ground, where it has just twenty-seven

rings. The first fourteen rings occupied one and a quarter inches from the centre, where the whole radius was but one and three quarters. It evidently began to grow more slowly when fifteen years old.

Wetherbee's oak lot may contain four or five acres.¹ The trees are white, red, scarlet, and swamp white oaks, maple, white pine, and ash. They are unusually large and old. Indeed, I doubt if there is another hereabouts of oaks as large. It is said that Wetherbee left them for the sake of mast for pigeons.

I measure a white oak at three feet from the ground, — eight feet four and one half inches in circumference. Another white oak at same height is six and three quarters in circumference; a red oak is six feet two inches in circumference; another, eight and a half; another, seven and four twelfths; and the scarlet oaks are of the same character, though the above were the largest, or among the largest. These oaks, though they form a wood, are some of them about as spreading as a pasture oak (*i. e.* one or two white ones near the outside), but generally they rise much higher before they branch. The white oaks have peculiarly smooth *tawny-white* boles for eight or ten feet up, the coarser flakes of the bark having scaled off so far. The red oaks, as well as scarlet, have a coarser and rougher, more deeply furrowed bark, and the trees rise higher before branching (commonly). One not very large had no limb for thirty feet or more, standing aslant. In the lowest part, on the brook, they were swamp white oaks and maples. The maples, being old, had a

¹ He says eight.

rough, dark, scaly bark. There were a few white pines straggling into this wood (only one large one).

Many of the oaks have been cut, and I counted about one hundred and ten rings on one small white oak, from which I should infer that the trees would average much more than that, perhaps between a hundred and fifty and two hundred years. Such a wood has got to be very rare in this neighborhood. Even the gray brushy tops of this attract your attention at a distance.

As you approach the wood, and even walk through it, the trees do not affect you as large, but as surely as you go quite up to one you are surprised. The very lichens and mosses which cover the rocks under these trees seem, and probably are in some respects, peculiar. Such a wood, at the same time that it suggests antiquity, imparts an unusual dignity to the earth.

It is pleasing to see under the trees great rocks covered with polypody, which has caught a great crop of shining brown oak leaves to contrast with its green. This oak wood is now bare and the leaves just fairly fallen.

This is probably one of those woods, like Ebby Hubbard's, which was never cut off but only cut out of.

I think it would be worth the while to introduce a school of children to such a grove, that they may get an idea of the primitive oaks before they are all gone, instead of hiring botanists to lecture to them when it is too late. Why, you do not now often meet with a respectable oak stump even, for they too have decayed.

I see a this year's sound red oak acorn tucked into a crevice in the bark of a white oak a foot or more from the ground.

Even in this old oak wood there is to be observed a resemblance to the primitive woods. The ground, never having been cleared nor cultivated, has a more primitive look; there are more ferns on it, and the rocks are far greener, with these and with lichens, never having been burned and bleached white by sun and fire.

Lee of the Corner speaks of an oak lot of his in Sudbury, which he bought in '31 and cut off (last and all of it last winter), but from the older stumps no sprouts have come up, but good ones from the younger.

You see the tufts of indigo now broken off and dropped exactly bottom up in the pastures, as if an industrious farmer had been collecting it by handfuls, which he had dropped thus.

It would be just as sensible for them to treat their young orchards or nurseries of apple trees in the same way, *i. e.*, to burn them over and raise rye there a year or two, thinking to do them good.

As for the *Vaccinia*, I am disposed to agree with those who derive the name from *bacca*, a berry, for one species or another of this large family is the berry of berries in most northern parts of the world. They form an under-shrub, or sort of lower forest, even throughout our woodlands generally, to say nothing of open fields and hills. They form a humble and more or less dormant, but yet vivacious forest under a forest, which bides its time.

This wonderful activity of the squirrels in collecting and dispersing and planting nuts and acorns, etc., etc., every autumn is the more necessary since the trees on whose fruit they mainly live are not annual plants

like the wheat which supplies *our* staff of life. If the wheat crop fails this year, we have only to sow more the next year, and reap a speedy harvest, but if the forests were to be planted only at intervals equal to the age of the trees, there would be danger, what with fires and blight and insects, of a sudden failure and famine. It is important that there be countless trees in every stage of growth, — that there be an annual planting, as of wheat. Consider the amount of work they have to do, the area to be planted!

More or less rainy to-day.

I hear that geese went over to-day, alighted in Walden.

Nov. 4. P. M. — To Tommy Wheeler's lot.

As I go over John Hosmer's High Level, there being considerable wind, I notice for the first time that peculiar blueness of the river agitated by the wind and contrasting with the tawny fields, a fall phenomenon. Tarbell's white pine grove northwest of the Irishman's, in the swamp, and some thirty to forty years old, is so dense that there is no growth under it, only a tawny carpet of pine-needles.

In the Tommy Wheeler lot south of the old pitch pine hollow, I see the stumps of many white pines and oaks which were cut some four years ago, and no fire has been set there. These oak stumps have generally fifty-three or fifty-four rings, though some pitch pines and oaks are much older; but I scarcely see a stump of this age even which has sent up any shoots. I notice one. The sprouts are from a much younger growth. It is evident that all the larger stumps were too old and

effete, young as they were. In two or three cases I notice these stumps of oaks cut some four years ago and having fifty-three or four rings (from which no shoot has put forth), two together, half inclosing in a semicircle a very old and almost completely decayed stump, which, of course, was cut some fifty-eight years ago. These sprouts are rarely sound quite to the core. Perhaps the rest are sprouts whose stumps have quite disappeared, and this, *i. e.* the great age of the roots, may account for its sending up no more sprouts. I see, then, that the stumps of trees which were cut sixty years ago are still very common to be seen in our woods.

I have but little doubt that if Wetherbee's old oak lot should now be cut no sprouts would come up from the stumps. It is by seeds that oaks would have to be renewed there, if at all; but rather it is time for a different growth, *i. e.* for pines, and if he contemplates the removal of these oaks he should be considering how to favor the growth of pines there. They are already appearing thinly on various sides within that wood.

I frequently notice the seeds of small fruits and weeds left on stumps by birds and mice and even foxes (in their excrement).

There is *primitive wood* which has never been touched by the civilized man. We have none of this.

Then there is *primitive woodland*, *i. e.*, which has never been cut clean off, and which in age now is mostly second growth.

Then there is *primitive copsewood*, *i. e.*, which has been cut clean off but suffered to grow up again without further clearing or burning.

Then copsewood of other kinds.

Sophia brings me the drawer which held her acorns (almost all red oak). It is seventeen and a half inches by twelve and a half and two inches deep, and I count, crawling about on the bottom, one hundred and seventy-three great full-grown grubs with brown heads, which have come out of the acorns by a hole, oftenest at the edge of the cup on one side. And many of the grubs had been thrown away, and probably some had crawled away within a month, and no doubt more are still to come out. Also the bottom of this box is covered with four or five times as many minute pink grubs which may be the progeny of the former: here are at least eight hundred and sixty-five (or say one thousand) grubs to about four quarts of acorns *with their cups* (the box was hardly more than half full). I find that sixty red oak acorns with their cups make one pint. There were, therefore, about five hundred acorns to one hundred and seventy-three large grubs already out in the box, to say nothing of those that have been thrown and have crawled away, nor of the seven or eight hundred *young* grubs and probably more yet to be produced. Not quite half of the acorns, then, have grubs in them.¹ Now add the squirrels, jays, crows, and other birds and quadrupeds that feed on them, and the effect of the winter's cold and rain, and how many of the acorns of this year will be fit to plant next spring?

¹ Nov. 22, about a third as many more grubs have come out of these acorns, — both large and small grubs, — which will make nearly half as many large grubs as acorns; and each of these large grubs has been the destruction of an acorn, so that already one half of these acorns have been destroyed by worms.

It appears that nearly half of these red oaks have already manifestly been destroyed by worms. It is evident that there will be at least two grubs to one of these acorns, though of course the grubs will not always be with the acorn. This is one of the nut weevils, and since they come from eggs laid by a beetle, it would seem that many eggs must have been *recently* laid.

White birch seed has but recently begun to fall. I see a quarter of an inch of many catkins bare. May have begun for a week. To-day also I see distinctly the tree sparrows, and probably saw them, as supposed, some days ago. Perhaps they feed on the birch seed as the linarias do. Thus the birch begins to shed its seed about the time our winter birds arrive from the north.

Nov. 5. P. M. — To Blood's oak lot.

Measure the great white oak near the bars of the bridle-road just beyond the northeast corner of the Holden (?) farm. At the ground it is about nineteen feet in circumference. At three feet from the ground it is eleven feet and seven inches in circumference, and the same at five feet and apparently more above this. It is about sixteen feet to the lowest limb. The whole trunk standing aslant. It has a black and quite rough bark, not at all like that of the white oaks of Wetherbee's and Blood's lots. There is a large open space amid the huckleberry bushes beneath it, covered with a short and peculiarly green sward, and this I see is the case with other oaks a quarter of a mile off.

There is a large chestnut in the lot east of this, and I observe that its top is composed of many small branches

and twigs disposed very regularly and densely, brush-wise, with a firm, distinct, more than semicircular edge against the horizon, very unlike the irregular, open, and more scraggy-twigged oak.

Blood's oak lot may contain about a dozen acres. It consists of red, black, white, and swamp white oaks, and a very little maple. The following are some of the largest that I saw. I measured one black oak which was, at three feet high, four feet eight inches in circumference; another, five feet six inches; and another the same. A red oak was six feet three inches; another, seven feet four inches; another, seven feet four inches; another, seven feet. One swamp white oak was six feet four inches. A white oak was seven feet seven inches, and another the same. The diameter of a third at one foot from ground (sawed off) was thirty-one and a half inches average.

This is quite a dense wood-lot, even without considering the size of the trees, and I was rather surprised to see how much spread there was to the tops of the trees in it, especially to the white oaks. The trees here rise far higher before branching, however, than in open land; some black oaks (if not others) were very straight and thirty to forty feet high without a limb. I think that there was not so much difference in color between the trunks of black and red oaks as commonly. The red oaks were oftener smooth, or smoothish, the largest of them. I saw very little decay. Considering their number and closeness, the trees were on the whole larger than I should have expected, though of course not nearly so large as the largest pasture oaks, — one to two and a half feet in diameter, or say generally (the sizable trees)

a foot and a half in diameter. This will probably do for a specimen of a primitive oak forest hereabouts. Such probably was the size and aspect of the trees.

As for its age, I saw the stump of a white oak (not quite so large as those I measured) which had been sawed off at about one foot from the ground within four or five years, perfectly level and sound to the core, and thirty-one and a half inches in diameter. The first thirty-three (?) rings were so close and indistinct as to be impossible to count exactly (occupying three quarters of an inch of the centre); the rest was perfectly distinct. In all one hundred and forty-seven rings; or, by inches from middle, thirty-nine, nine, six, seven, five, eleven, six, four, four, five, six, nine, ten, twelve, and then three quarters of an inch left. From which it appears that it grew much the fastest at about the age of eighty-nine years and very much the slowest for the first thirty-three years.

I am struck by the fact that the more slowly trees grow at first, the sounder they are at the core, and I think that the same is true of human beings. We do not wish to see children precocious, making great strides in their early years like sprouts, producing a soft and perishable timber, but better if they expand slowly at first, as if contending with difficulties, and so are solidified and perfected. Such trees continue to expand with nearly equal rapidity to an extreme old age.

Another white oak stump, not so large but somewhat decayed, had one hundred and sixty and more rings. So that you may say this wood is a hundred to a hundred and sixty years old.

I was struck by the orderly arrangement of the trees, as if each knew its own place; and it was just so at Wetherbee's lot. This being an oak wood, and like that, somewhat meadow [*sic*] in the midst, the swamp white oaks with a very few maples occupied that part, and I think it likely that a similar selection of the ground might have been detected often in the case of the other oaks, as the white compared with the red. As if in the natural state of things, when sufficient time is given, trees will be found occupying the places most suitable to each, but when they are interfered with, some are prompted to grow where they do not belong and a certain degree of confusion is produced. That is, our forest generally is in a transition state to a settled and normal condition.

Many young white pines — the largest twenty years old — are distributed through this wood, and I have no doubt that if let alone this would in a hundred years look more like a pine wood than an oak one.

Hence we see that the white pine may introduce itself into a primitive oak wood of average density.

The only sounds which I heard were the notes of the jays, evidently attracted by the acorns, and the only animal seen was a red squirrel, while there were the nests of several gray squirrels in the trees.

Last evening, the weather being cooler, there was an arch of northern lights in the north, with some redness. Thus our winter is heralded.

It is evident that the pasture oaks are commonly the survivors or relics of old oak woods, — not having been set out of course, nor springing up often in the

bare pasture, except sometimes along fences. I see that on the outskirts of Wetherbee's and Blood's lots are some larger, more spreading and straggling trees, which are not to be distinguished from those. Such trees are often found as stragglers beyond a fence in an adjacent lot. Or, as an old oak wood is very gradually thinned out, it becomes open, grassy, and park-like, and very many owners are inclined to respect a few larger trees on account of old associations, until at length they begin to value them for shade for their cattle. These are oftenest white oaks. I think that they grow the largest and are the hardiest. This final arrangement is in obedience to the demand of the cow. She says, looking at the oak woods: "Your tender twigs are good, but grass is better. Give me a few at intervals for shade and shelter in storms, and let the grass grow far and wide between them."

No doubt most of those white pines in pastures which branch close to the ground, their branches curving out and upward harpwise without one erect leading shoot, were broken down when young by cows. The cow does not value the pine, but rubs it out by scratching her head on it.

Nov. 6. Sawed off half of an old pitch pine stump at Tommy Wheeler's hollow. I found that, though the surface was entire and apparently sound except one or two small worm-holes, and the sap was evidently decaying, yet within, or just under the surface, it was extensively honeycombed by worms, which did not eat out to the surface. Those rings included in the outmost four or

five inches were the most decayed, — including the sap-wood.

Nov. 7. To Cambridge and Boston.

Nov. 8. 2 P. M. — To Mt. Misery via sugar maples and Lee's Bridge.

The white oak near the English cress at three feet is nine feet and one twelfth in circumference and has a rough and dark bark. By its branching so low, it suggests that it may have stood in comparatively open ground most of its life, or such as the outmost oaks in Blood's wood toward his house.

I notice along the Corner road, beyond Abiel Wheeler's, quite a number of little white pines springing up against the south wall, whose seed must have been blown from Hubbard's Grove some fifty rods east. They extend along a quarter of a mile at least. Also a wet and brushy meadow some forty rods in front of Garfield's is being rapidly filled with white pines whose seeds must have been blown an equal distance.

We need not be surprised at these results when we consider how persevering Nature is, and how much time she has to work in, though she works slowly. A great pine wood may drop many millions of seeds in one year, and if only half a dozen are conveyed a quarter of a mile and lodge against some fence, and only one comes up and lives there, yet in the course of fifteen or twenty years there are fifteen or twenty young trees there, and they begin to make a show and betray their origin. It

does not imply any remarkable rapidity or success in Nature's operations.

In the wood north of the sugar maples a hickory but two feet in circumference has eighty-six rings. A white oak twenty-six inches [in] diameter has one hundred and twenty-eight rings.

The sugar maples occupy, together with oaks of the same size, about thirty rods, or say ten rods by three. The largest about five inches [in] diameter, but generally quite small. They have sprung from quite small stumps, commonly not bigger than themselves at most. They are peculiar among maples in retaining yet a part of their leaves, — a delicate fawn(?) -color, pale brown.

There is quite a pitch pine wood on the lane beyond the second Garfields, but though there are *very* few little white pines under it (no large ones), these are under the densest part, and there are no little pitch pines, though they are common in the more open parts. Seed-bearing pines are distant here. I observe on the trunk of one of the largest of these pitch pines (which may be forty years old), standing on the outside the wood, minute or short branches, commonly mere tufts of needles in rings around the trunk, — reminding you even of the branches of the horse-tail, they are in this case so regular, — perfectly horizontal and six to twelve inches apart. Some are two or three years old, but only three to six inches long. These seem to represent the old whorls of branches. Perhaps, the tree growing slowly at the top, the dormant buds here are stimulated. I afterward see in another wood an outside

pitch pine, a tall one, on which some of these tufts had apparently developed into branches four or five feet long, in imperfect whorls, the top being partly dead.

A white oak stump, roadside west of Abel Minott house site, nineteen and one half inches [in] diameter (wood), sixty-five rings. A pitch pine standing on opposite side more westerly is five and nine twelfths feet in circumference at three feet.

I observe on the west side of Mt. Misery, cut off apparently last winter, mulleins, very tall, sprung up, — as well as fire-weed and goldenrods. I saw an abundance of mulleins in a young wood-lot with much bare ground, burnt over a year or so ago, behind Mason's on the bridle-road, on the 5th, so that the mullein too might be called a fire-weed. But I notice that those plants so called, as the epilobium and senecio, and which are supposed to owe their origin to the fire, generally spring up on a surface made bare by whatever cause. They are the first weeds after a clearing or cutting.

On this same Mt. Misery (cut last winter), an oak stump (apparently black) eleven and one half inches [in] diameter, sixty-one rings; a white oak, thirteen inches, fifty-eight rings. I count four or more of these stumps, — which are as plain as usual, — and make from fifty-four to sixty-one rings, say average fifty-eight years. Yet in several of these instances they were manifestly sprouts, and there was the old stump cut 58 + 1 years ago.¹ These stumps did not show any trace of the axe, but there was one which lay on its side, apparently of the same date, but from which no sprout had come, which

¹ *Vide* Nov. 13.

was much better preserved and did show the traces of the axe plainly. These recent stumps, though only some sixty years old, had in no case sprouted again, and I think that this is because they are sprouts, and that the vitality of the stock was so nearly exhausted. These old stumps are frequently half inclosed in the recent stump. I think that I readily detected the sprout also by the greater breadth of the rings the first few years.

The stumps of trees which were cut in the last century — oaks at least — must be not uncommon in our woods.

Looking from this hill, I think that I see considerably more oak than pine wood.

Edward Hoar's pitch pine and white pine lot on the south side of this hill is evidently a new wood. You see the green moss, the cladonia, and birches (which I think do not spring up within an old wood), and even feel with your feet an old cow-path and see an old apple tree inclosed in the wood. Are not birches interspersed with pines a sign of a new wood?

When a pitch pine wood is cut, that fringe or edging of little pitch pines which commonly surrounds it may remain to grow up and in a measure represent it. Also, apparently, when for any reason, as from frost, land where the wood has been cut remains comparatively bare for several years and becomes only grassy, pitch pines (as well as white pines) may catch there thickly.

I constantly meet now with those tufts of indigo-weed (turned black) now broken off and dropped exactly bottom up, as it were dropped by a careful hand

in woodland paths or in pastures, as if an industrious farmer or a simpler had been collecting it by handfuls and had dropped his parcels thus. The fact is that they grow up many stems close together, and their branches are so interlaced as not to be easily separated; so that the wind operates the more powerfully and breaks them all off together at the ground, and then, on account of their form, these parcels are deposited exactly bottom up commonly, and you see three or four to fifteen or more stems within a diameter of four or five inches, looking just as if somebody had plucked them and laid them together.¹ I also see the fly-away grass going over a wall or rock from time to time.

The *Salix sericea* has just blackened the ground with its leaves.

These are annual phenomena.

Dr. (?) Manasseh Cutler, in the first volume of the Boston Academy's Reports for 1785, speaks of whortleberries only in the half-converted or disparaging way in which the English do, — and have reason to, — saying that children love to eat them in milk. His eyes had not been opened to their significance; they were without honor in their native country. But I have no doubt that he ate them himself in secret.

Nov. 9.² 12 M. — To Inches' Woods in Boxboro.

This wood is some one and three quarters miles from West Acton, whither we went by railroad. It is in the east part of Boxboro, on both sides of the Harvard

¹ So these seeds and fly-away grass seed dispersed.

² *Vide* also Nov. 16.

turnpike. We walked mostly across lots from West Acton to a part of the wood about half a mile north of the turnpike, — and the woods appeared to reach as much further north. We then walked in the midst of the wood in a southwesterly by west direction, about three quarters of a mile, crossing the turnpike west of the maple swamp and the brook, and thence south by east nearly as much¹ more, — all the way in the woods, and chiefly old oak wood. The old oak wood, as we saw from the bare hill at the south end, extends a great deal further west and northwest, as well as north, than we went, and must be at least a mile and a half¹ from north to south by a mile to a mile and a quarter¹ possibly from east to west. Or there *may* be a thousand² acres³ of old oak wood. The large wood is chiefly oak, and that white oak, though black, red, and scarlet oak are also common. White pine is in considerable quantity, and large pitch pine is scattered here and there, and saw some chestnut at the south end. Saw no hemlock or birch to speak of.

Beginning at the north end of our walk, the trees which I measured were (all at three feet from ground except when otherwise stated): a black oak, ten feet [in] circumference, trunk tall and of regular form; scarlet oak, seven feet three inches, by Guggins Brook; white oak, eight feet; white oak, ten feet, forks at ten feet; white oak, fifteen feet (at two and a half feet, bulging very much near ground; trunk of a pyramidal form;

¹ [Queried in pencil.]

² Four or five hundred.

³ *Vide* [p. 227].

first branch at sixteen feet; this just north of turnpike and near Guggins Brook); white oak, nine feet four inches (divides to two at five feet); white oak, nine feet six inches (divides to two at five feet); red oak, eight feet (south of road); white pine, nine feet; a scarlet or red oak stump cut, twenty and a half inches [in] diameter, one hundred and sixty rings.

I was pleased to find that the largest of the white oaks, growing thus in a dense wood, often with a pine or other tree within two or three feet, were of pasture oak size and even form, the largest commonly branching low. Very many divide to two trunks at four or five feet only from the ground. You see some white oaks and even some others in the midst of the wood nearly as spreading as in open land.

Looking from the high bare hill at the south end, the limits of the *old* oak wood (so far as we could overlook it) were very distinct, its tops being a mass of gray brush, — contorted and intertwined twigs and boughs, — while the younger oak wood around it, or bounding it, though still of respectable size, was still densely clothed with the reddish-brown leaves.

This famous oak lot — like Blood's and Wetherbee's — is a place of resort for those who hunt the gray squirrel. They have their leafy nests in the oak-tops.

It is an endless maze of gray oak trunks and boughs stretching far around. The great mass of individual trunks which you stand near is very impressive.

Many sturdy trunks (they commonly stand a little aslant) are remarkably straight and round, and have so much regularity in their roughness as to suggest smooth-

ness. The older or largest white oaks were of a rougher and darker bark than Wetherbee's and Blood's, though often betraying the same tendency to smoothness, as if a rough layer had been stripped off near the ground.

I noticed that a great many trunks (the bark) had been gnawed near the ground, — different kinds of oak and chestnut, — perhaps by squirrels.

Nov. 10. Cheney gives me a little history of the Inches Woods. He says it was a grant to Jekil (John (?) Jekil) by the crown, and that it amounted to half of Boxboro as well as much of Stow and Acton. That Jekil had a summer house where Squire Hosmer's house stands in Stow, before the Revolution, but at that time withdrew into Boston. It was a great event when he used to come out to Stow in the summer. Boxboro was a part of Stow then. Mr. Hosmer had charge of the lands for Inches, and the kitchen of his house was partly the old summer house of Jekil, and he also remembered an old negro named York, who had been a slave of Jekil, and he, the negro, said that twenty of the thirty acres bought of Inches by Hosmer, behind his house, was once fenced in with a paling or picket fence ten or fifteen feet high, and formed a park in which Jekil kept deer. The neighbors used to come and peep through the paling at the deer. Henderson Inches, hearing of these lands about the time of the Revolution, went to the heirs of Jekil and purchased the whole tract quite cheap, and they had been a fortune to the family since. Many farms have been made of parts of the wood, and thousands of dollars' worth of wood have been sold at a time.

Had realized maybe \$150,000 from it. Cheney had heard that there were about four hundred acres of the Inches lands left. Henderson Inches died two or three years ago, and now his heirs wished to sell, but would not divide it, but sell in one body. Ruggles, Nourse, and Mason wished to buy, but not the whole. Except what has been sold, or generally, Inches would not have it cut. He was sharp and stood out for his price, and also liked to keep it. Hence it is a primitive oak wood and said to be the most of one in Massachusetts.

Collier tells me that his sunflower-head (now dried) measures just twenty-one and a half inches [in] diameter, — the solid part.

Most think that Inches Wood was worth more twenty or thirty years ago, — that the oaks are now decayed within. Some have suggested that it would be much for the benefit of Boxboro to have it cut off and made into farms, but Boxboro people answer no, that they get a good deal more in taxes from it now than they would then.

How little there is on an ordinary map! How little, I mean, that concerns the walker and the lover of nature. Between those lines indicating roads is a plain blank space in the form of a square or triangle or polygon or segment of a circle, and there is naught to distinguish this from another area of similar size and form. Yet the one may be covered, in fact, with a primitive oak wood, like that of Boxboro, waving and creaking in the wind, such as may make the reputation of a county, while the other is a stretching plain with scarcely a tree on it. The waving woods, the dells and glades and green

banks and smiling fields, the huge boulders, etc., etc., are not on the map, nor to be inferred from the map.

That grand old oak wood is just the most remarkable and memorable thing in Boxboro, and yet if there is a history of this town written anywhere, the history or even mention of this is probably altogether omitted, while that of the first (and may be last) parish is enlarged on.

What sort of cultivation, or civilization and improvement, is ours to boast of, if it turns out that, as in this instance, unhandselled nature is worth more even by our modes of valuation than our improvements are, — if we leave the land poorer than we found it? Is it good economy, to try it by the lowest standards, to cut down all our forests, if a forest will pay into the town treasury a greater tax than the farms which may supplant it, — if the oaks by steadily growing according to their nature leave our improvements in the rear?

How little we insist on truly grand and beautiful natural features! How many have ever heard of the Boxboro oak woods? How many have ever explored them? I have lived so long in this neighborhood and but just heard of this noble forest, — probably as fine an oak wood as there is in New England, only eight miles west of me.

I noticed young white pines springing up in the more open places and dells. There were considerable tracts of large white pine wood and also pine and oak mixed, especially on the hills. So I see that the character of a primitive wood may gradually change, as from oak to

pine, the oaks at last decaying and not being replaced by oaks.

Though a great many of those white oaks of the Inches Wood branch quite as low and are nearly as spreading as pasture oaks, yet generally they rise up in stately columns thirty or forty or fifty feet, diminishing very little. The black and red and scarlet oaks are especially columnar and tall, without branches for a long distance, and these trees are shaped more in their trunks like an elm than a pasture oak. They commonly stand aslant at various angles. When, in the midst of this great oak wood, you look around, you are struck by the great mass of gray-barked wood that fills the air. The leaves of these old oaks are now fairly fallen, and the ground is densely covered with their rustling reddish-brown scales.

A peculiarity of this, as compared with much younger woods, is that there is little or no underwood and you walk freely in every direction, though in the midst of a dense wood. You walk, in fact, *under* the wood.

The wood not having been cut to any extent, and the adjacent country being very little occupied, I did not notice a single cart-path where a wheel-track was visible, — at most a slight vista, and one footpath. I knew that I was near the southwest edge by the crowing of a cock.

This wood is said to have been a great resort for pigeons. We saw one large pigeon-place on the top of the hill where we first entered it. Now used.

Seeing this, I can realize how this country appeared when it was discovered. Such were the oak woods which the Indian threaded hereabouts.

Such a wood must have a peculiar fauna to some extent. Warblers must at least pass through it in the spring, which we do not see here.

We have but a faint conception of a full-grown oak forest stretching uninterrupted for miles, consisting of sturdy trees from one to three and even four feet in diameter, whose interlacing branches form a complete and uninterrupted canopy. Many trunks old and hollow, in which wild beasts den. Hawks nesting in the dense tops, and deer glancing between the trunks, and occasionally the Indian with a face the color of the faded oak leaf.

Grimes said that he could almost clasp the loins of my lynx as it hung up by the heels before it was skinned; it was so slender there that a man with a large hand could have done it.

Richardson in his "Fauna Boreali-Americana," which I consulted at Cambridge on the 7th, says that the French-Canadians call the Canada lynx indifferently *Le Chat* or *Le Peeshoo*, and Charlevoix falsely calls it *Carcajou*, which is the wolverene, and hence much confusion and error among naturalists. "Seven to nine thousand are annually procured by the Hudson's Bay Company. It is found on the Mackenzie River as far north as latitude 66°." Easily killed by a stroke with a small stick on the back! (?) Breeds once a year and has two young. Never attacks man. A poor runner, but a good swimmer. Audubon and Bachman repeat Richardson. According to Pennant, Lawson and Catesby repeat the falsehoods about its dropping from trees on deer, etc.

Observed in the dropping of a fox the other day, with fur, some quarter-shaped (or triangular segments) seeds, and roughish, which may have been seeds of rose hips. They were white. So are the sweet-briar hips, but the common wild rose hips are brownish. Were they prinus seeds? If rose hips, then the fox enjoys what Manasseh Cutler in 1785 called "the conserve of hepps of the London dispensatory" without the sugar.

Elijah Wood, senior, tells me that about 1814 (or before 1815, in which year he was married, and while he still lived at his father's on Carlisle road), as he was riding to town on horseback in the evening alone to singing to prepare for Thanksgiving, he stopped to let his horse drink at the brook beyond Winn's, when he heard a cry from some wild beast just across the river. It affected him so that he did not stop to let his horse drink much. When he returned later, — now with others, — they all heard it, as if answering to their shouts, somewhat further up the river. It was also heard by some teamsters, and also an animal supposed to be the same was said to have been seen by a woman crossing the road just west of where Wood now lives. It was thought to be a wolverene.

I have now measured in all eight pitch pine stumps at the Tommy Wheeler hollow, sawed off within a foot of the ground.

I measured the longest diameter, and then at right angles with that, and took the average, and then selected that side of the stump on which the radius was of average length and counted the number of rings in each inch, beginning at the centre, thus:—

	1st inch	2	3	4	5	6	7	8	9	10	11	12	Radius	Rings, in all
1st tree	9—	12+	9—	7+	11½	16½(?)	26(?)	25	26	in ⅞ inch 17			9½	158
2	10+	7+	6	5½	5	6½	9½	11	13½	19	33	in ⅝ inch 38	11½	164
3	13—	11	9	11	15	21	16	20	28	32			10	176(?); more correctly, 168
4	15	12	10	16	24	19	18	16	15	in ¾ inch 3			9½+	148
5 diam. 13½	12	12	9	9	11	23	17	21	22	in ⅔ inch 25			9½	171 <i>I have this; more correctly, 165</i>
6	15	13	11	14	18	19	23	21	21	in ½ inch 16			9½+	171
7	13	11	11	11	22	29	42	in ⅞ inch 24					7½	163
8	16	13	12	13	11	14	14	19	28	in ¼ inch 10			9¼	About 150
2	103	91	77	86½	117½	148	165½	133	163½	51	33		Av. R. about 9½	Av. age 162 or 163 years
	13—	11+	10—	11—	15—	18+	21—	19	23+	25+	33		Av. Diam. 19.	

Of these eight, average growth about one seventeenth of an inch per year.

Calling the smallest number of rings in an inch in each tree 1, the comparative slowness of growth of the inches is thus expressed, *viz.*: —

1	1.3	1.7	1.3	1.	1.6	2.3	3.7	3.6	3.7			
2	2.	1.4	1.2	1.1	1.	1.3	1.9	2.1	2.7	3.8		
3	1.4	1.2	1.	1.2	1.7	2.3	1.6	2.2	3.1	3.4		
4	1.5	1.2	1.	1.6	2.4	1.9	1.8	1.6	1.5			
5	1.3	1.3	1.	1.	1.2	2.4	1.9	2.3	3.4			
6	1.4	1.2	1.	1.3	1.6	1.7	2.1	1.9	1.9	2.5		
7	1.2	1.	1.	1.	2.	2.6	3.8	3.6				
8	1.4	1.2	1.1	1.2	1.	1.3	1.3	1.7	2.5	3.6		

From the line *x* I calculate the average rate of growth in diameter (or radius) each successive ten years thus (in decimals of an inch):¹ —

1 to 10	10 to 20	20-30	30-40	40-50	50-60	60-70
(.77)	(.87)	(.96)	(.95)	(.78+)	(.66)	(.55+)
70-80	80-90	90-100	100-110	110-120	120-130	
(.54-)	(.48-)	(.48+)	(.53-)	(.51)	(.43+)	
130-140	140-150	150-160	160-170	170-180	180-190	
(.43+)	(.403)	(.40)	(.36+)	(.30)	(.30)	

Of course the error is great in proportion as the number of rings in an inch exceeds ten.

They grew in the first decade more than in any decade after their fiftieth year, and continued to grow with pretty regularly accelerated growth up to about the end of the third decade, or say about the twenty-ninth year, when they were increasing fastest in diameter, — 1.92 inches in ten years. They continued to

¹ It would have been much easier, as well as more correct if I had counted at first the number of rings to each inch.

grow at nearly the same rate through the fourth decade, and then their rate of growth very suddenly decreased, — *i. e.*, in fifth decade, or from the fortieth to the fiftieth years, when they grew only about the same as in the first decade. In the sixth and seventh decades the rate of growth steadily decreased as fast as it had increased in the first three decades, and it continued to decrease through the eighth, ninth, and tenth decades, though much more slowly. In the eleventh and twelfth decades, or from one hundred to one hundred and twenty years, the rate was accelerated, or they grew faster than from eighty to one hundred, but after the twelfth decade the rate of growth steadily decreased to the last, when it was less than one third what it was in the third decade.¹ When growing fastest, or between the twentieth and thirtieth year, the radius often was not increased one inch in ten years. But after they were one hundred and sixty years old they did not grow four tenths² of an inch in ten years — or one twenty-fifth³ of an inch in one year.⁴ On an average, by accurate observation these eight trees were gaining the most in diameter at about the thirtieth year, and least (with one exception) in the last ten years of their existence.

Many have inferred that it is most profitable to cut pitch pine when about thirty (or forty) years old, but they seem to forget that the most rapid increase in diameter when the tree is only ten or fifteen years old

¹ According to calculation, but *actually* still less.

² On an average, $\frac{2}{100}$.

³ $\frac{1}{36}$

⁴ And sometimes much less, as has been stated.

does not indicate so great bulk of wood added to the tree, as a much less increase in diameter when it is fifty or one hundred years old. Indeed these trees, slowly as they appeared to grow at last, increased in bulk far more rapidly in the last twenty years than in the first twenty, — or as thirty-six to ten.

The absolute area of the annual rings (which is in the same proportion as the bulk of wood formed) each ten years is (calculated from the measurement on the third page back): —

	1st 10 yrs.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1st tree	inch 3.9	7.9	10.5	28.1	23.2	21.6	18.1	15.7	15.7	18.8	18.8	19.7	20.5	20.5	14.		
2	3.1	17.3	39.3	53.4	43.2	44.8	41.4	33.	31.4	22.3	20.	20.	16.	12.	12.	12.	
3	2.4	6.7	15.6	19.5	19.2	18.4	16.5	17.4	25.5	24.5	23.6	21.3	19.	19.	18.8	18.7	18.7
4	2.1	5.	10.2	15.1	13.8	12.4	11.8	13.7	18.2	20.	22.7	26.7	29.5	35.6	29.7		
5*	2.6	6.8	13.6	22.3	25.4	18.2	15.	18.6	24.	23.	22.4	19.	16.7	16.7	17.2	18.1	18.1
6	2.1	4.7	8.7	14.4	15.7	15.7	15.7	18.	18.2	17.8	17.8	21.	23.4	24.2	25.4	23.4	21.3
7	2.4	6.7	12.	17.1	17.1	12.8	12.7	11.9	11.9	11.2	9.7	9.7	9.7	9.9	11.8	11.8	
8	2.	4	7.8	13.1	16.5	22.2	25.2	23.2	23.2	2.8	24.7	20.2	19.1	19.1	14.9		
	20.6	59.1	123.7	183.0	174.1	166.1	156.4	153.5	174.1	165.6	159.7	157.6	152.9	157.0	143.8	84.0	58.1
Av.	2.6	7.4	15.5	22.9	21.7	20.8	19.5	19.2	21.8	20.7	20	19.9	19.1	19.6	18.	16.8	19.4

* By actually measuring the space covered by each successive ten rings for the fifth tree I got .9, .6, 1, 1.1, 1, .7, .5, .5, .56, .5, .5, .37, .25, .44, .25, .31, .25.

According to the above, most wood is made in the fourth decade, though there is but little decrease in amount afterward.

There is a loss of time if you cut at thirty or even forty years, for, supposing that a new pitch pine were at once to take the place of the old one, at the end of forty years more you would only have got $(2.6 + 7.4 + 15.5 + 22.9 =)$ 48.5 of wood more, instead of $(21.7 + 20.8 + 19.5 + 19.2 =)$ 81.2 more, which you would have had by this time if you had let the tree stand. Or if you had cut it at eighty years, you would only have 129.7 of wood after eighty years more, instead of the 155.9 that might have grown. Or even if you should cut every forty years, you would after one hundred and sixty years have got only 194 of wood to 285.6 that you might have had. From which I infer that the greater bulk of wood made in the third and fourth decade is so little more than that made in any succeeding ten years of the tree's age, and so much more than that made in the previous ten years, that if you want this kind of wood it is best to let the tree stand as long as it is sound and growing.

To be sure, the above calculation supposes the tree to increase in height in proportion to its age—which is hardly the case—and also that the same number of large trees can stand on the same area as of small ones. But even after these deductions, when we consider the proportionally greater value of large timber of this kind, it must be best to let it grow as long as it will.

The same is true until the last forty years makes less wood than the first forty. The first forty makes 48.5;

the last, 76.8. However, the time of cutting may depend partly on the number of trees that stand on a given area and also on whether they are wanted for fuel or for lumber, many small being about as good for the former use as a few large; *i. e.*, these trees made more wood any other forty years than the first. Why, then, employ them then only?

Nov. 10 and 11 were rainy, raising the river considerably on to the meadows.

Nov. 13. P. M. — To Mt. Misery.

A white birch (*Betula alba*) west edge of Trillium Wood, two feet seven inches [in] circumference at three feet.

On the Moore and Hosmer lot, cut in '52 (I think), west of railroad, south of Heywood's meadow, an oak stump fifteen and a half inches [in] diameter, ninety-three rings; another, white oak, fourteen and a half inches [in] diameter, ninety-four rings. In the first case there were two stumps of same age, evidently sprouts from an older stock, they curving around it, but I observed only a slight hollow where apparently the old stump had been. In the second case there was but one stump, but that rather concave on one side where there was a deep hollow in the earth. In both of these cases the tenacious mould, covered slightly with a fine greenish lichen, appeared heaved up about where the old stump had been. It was a good hundred years since that old stump was cut. The inmost rings of the recent stumps were coarse, as with sprouts.

Near these apparently a black (?) oak, or maybe a chestnut (?), twenty inches [in] diameter and seventy-four rings, but the centre was within four inches of the westerly side.

A white oak standing by the fence west of Spanish Brook dam on Morse's lot, circumference six feet and two twelfths at three feet. Near by a hornbeam a foot and a half [in] circumference at three feet.

J. Baker's pitch pines south of upper wood-path north of his house abundantly confirm the rule of *young* white pines under pitch pines. That fine young white pine wood west of this is partly of these which were left when the pitch pines were cut.

Baker's hill between farm and Pleasant Meadow, oak (apparently a black), diameter twenty-six, seventy-one rings. The stumps here were cut some five or six years ago and have fifty to sixty rings. Commonly no sprouts from those of this age here.

On top of Mt. Misery, looked again at those old stumps (of the 8th). There are three or four quite plain, just showing themselves above the surface, with rounded, flaky, decaying and crumbling edge, close to the recent stump of the shoot or shoots which sprang from them and which were cut last winter. One of these recent stumps, counted to-night, gives sixty years, but the first two or three are uncertain. Hence this old stump is as old as the century.

There are several perfectly dry and exposed stumps on bare rocky shelves, or else lying on rocks on their sides, quite well preserved and showing the marks of the axe, which I have but little doubt are of the same

age, preserved by being tipped out of the earth many years ago.¹

Am surprised at the very slow growth of some hickory (stumps) along the wall on the top of this hill, — so fine I did not count quite accurately.

One was 10 inches in diameter with	104 rings
“ “ 6 $\frac{1}{2}$ “ “	about 115 “
“ “ 14 $\frac{1}{2}$ “ “	“ 84 “
“ “ 11 $\frac{3}{4}$ “ “	121 “

I think that the oak stumps have lasted unusually long on this hill, on account of their having originally grown slowly here and since been so much exposed to the light and air over and amid the rocks.

Nov. 14. River two feet four inches above summer level (and at height) on account of rain of 10th and 11th and 12th.

The red maple on south edge of Trillium Wood is six feet three inches in circumference at three feet.

Yellow butterflies still.

Almost all holes in and about stumps have nutshells or nuts in them.

Nov. 16. This and yesterday Indian-summer days.
P. M. — To Inches Woods.

Walked over these woods again, — first from Harvard turnpike at where Guggins Brook leaves it, which is the east edge of the old wood, due north along near the edge of the wood, and at last more northwest along edge to the cross-road, a strong mile.

¹ Vide account of pine stump, April 5, 1859.

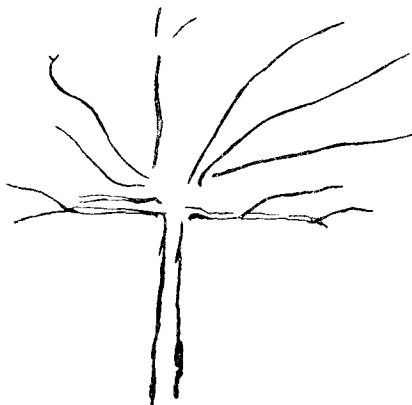
² Have this. Vide Nov. 19th.

I observe that the black, red, and scarlet oaks are generally much more straight and perpendicular than the white, and not branched below. The white oak is much oftener branched below and is more irregular, — curved or knobby.

The first large erect black oak measured on the 9th was by the path at foot of hill southeast of pigeon-place. Another, more north, is (all at three feet when not otherwise stated) ten and a half [feet] in circumference.

There is not only a difference between most of the white oaks within Blood's wood and the pasture oaks without, — the former having a very finely divided and comparatively soft tawnyish bark, and the latter a very coarse rugged and dark-colored bark, — but there is here a similar difference within this wood; *i. e.*, some of the white oaks have a hard, rugged bark, in very regular oblong squares or checkers (an agreeably regular *roughness* like a coat of mail), while others have a comparatively finely divided and soft bark.

I see one white oak shaped like this:—



It happens oftenest here, I think, that the very largest white oaks have the most horizontal branches and branch nearest the ground, which would at first suggest that *these* trees were a different variety from the more upright and rather smaller ones, but it may be that these are older, and for that reason had more light and room and so temptation to spread when young.

Northwesterly from pigeon-place (near base of hill), —

A white oak $6\frac{3}{4}$ in circumference

“ “ “ $8\frac{4}{12}$

“ “ “ $6\frac{1}{12}$

The last one grows close against a rock (some three feet high), and it has grown over the top and sides of this rock to the breadth of twelve and eighteen inches in a thin, close-fitting, saddle-like manner, very remarkable and showing great vigor in the tree.

Here, too, coming to water, I see the swamp white oak rising out of it, elm-like in its bark and trunk. Red maples also appear here with them. It is interesting to see thus how surely the character of the ground determines the growth. It is evident that in a wood that has been let alone for the longest period the greatest regularity and harmony in the disposition of the trees will be observed, while in our ordinary woods man has often interfered and favored the growth of other kinds than are best fitted to grow there naturally. To some, which he does not want, he allows no place at all.

Hickories occasionally occur, — sometimes scaly-barked, if not shagbarks, — also black birch and a few little sugar maples.

Still going north, a white pine nine feet [in] circumference.

The wood at the extreme north end (along the road) is considerably smaller. After proceeding west along the road, we next went west by south through a maple and yellow birch swamp, in which a black oak eight feet and four twelfths [in] circumference, a red maple six feet and a half, a black birch seven feet, a black birch eight feet. And in the extreme northwesterly part of the wood, close to the road, are many large chestnuts, — one eleven and three quarters feet [in] circumference with many great knobs or excrescences, another twelve and seven twelfths.

We next walked across the open land by the road to the high hill northeast of Boxboro Centre. In this neighborhood are many very large chestnuts, of course related to the chestnut wood just named. 1st, along this road just over the north wall, beyond a new house, one $13\frac{1}{2}$ feet in circumference; 2d, 16, a few rods more west by the wall; then, perhaps fifty or sixty rods more west and maybe eight or ten rods north from the road, along a wall, the 3d, $15\frac{2}{3}$; and then, near the road, southwest from this, the 4th, $15\frac{4}{5}$; and some rods further north, toward hill and house of O. and J. Wetherbee, the 5th, $13\frac{7}{12}$; then northeast, in lower ground (?), the 6th, 16 feet, at ground $21\frac{1}{3}$; then, near base of hill, beyond house, the 7th, $16\frac{2}{3}$ at two feet from ground; next, some rods west of the hill, the 8th, $17\frac{8}{12}$ at three feet, at ground $23\frac{1}{2}$; and then, a considerable distance north and further down the hill, the 9th, $13\frac{4}{12}$. (There [were] also four other good-sized chestnuts

on this hillside, with the last three.) Or these nine trees averaged about $15\frac{1}{4}$ feet in circumference. The 3d tree had a limb four or five feet from the ground, which extended horizontally for a rod toward the south, declining a little toward the earth, and this was nine feet in circumference about eighteen inches from the tree. The 7th had a large limb broken off at one foot above the ground on the side, whose stump prevented measuring at the ordinary height. As I remember, the 8th was the finest tree.

These nine (or thirteen) trees are evidently the relics of one chestnut wood of which a part remains and makes the northwest part of Inches Wood, and the trees are all within about a quarter of a mile southeast and northwest, the first two being by themselves at the southeast.

The chestnut is remarkable for branching low, occasionally so low that you cannot pass under the lower limb. In several instances a large limb had fallen out on one side. Commonly, you see great rugged strips of bark, like straps or iron clamps made to bind the tree together, three or four inches wide and as many feet long, running more or less diagonally across the trunk and suggesting a very twisted grain, while the grain of the recent bark beneath them may be perpendicular. Perhaps this may be owing to old portions of the bark which still adhere, being wrenched aside by the unequal growth of the wood. I think that all these old trunks show this.



Frank Brown tells me of a chestnut in his neighborhood nineteen feet and eight(?) inches in circumference at three feet.

White oaks within a wood commonly, at Wetherbee's and Blood's woods, have lost the outside rough and rugged bark near the base, like a jacket or vest cast off, revealing that peculiar smooth tawny-white inner garment or shirt. Probably the moisture and shade of a wood softens the bark and causes it to scale off. Apparently outside trees do not lose this outer bark, but it becomes far more rugged and dark exposed to the light and air, forming a strong coat of mail such as they need.

Most of the white oaks in Inches Wood are of a slight ashy tinge and have a rather loose, scaly bark, but the larger, losing this below, become tawny-white.

Having returned into Inches Wood, not far west of the meadow (which is west of the brook), at the angle made by the open land, a black oak stump recently cut, about one foot high and twenty-one inches in diameter, had only one hundred and six rings. A white oak only nine inches in diameter near by had eighty rings. I suspect that the smaller white oaks are much older comparatively (with the large) than their size would indicate, as well as sounder and harder wood. A white oak at three feet, six and one half in circumference. A black oak had been recently cut into at the west base of Pigeon Hill, and I counted about eighty-five rings in the outside three inches. The tree (wood only) was some twenty-three inches in diameter.

Looking at this wood from the Boxboro hill, the

white pines appeared to be confined chiefly to the higher land, forming a ridge from north to south. Young white pines have very generally come in (a good many being twenty feet high or more), though in some places much more abundantly than in others, all over this oak wood, though not high enough to be seen at a distance or from hills (except the first-named larger trees); but though there are very many large pitch pines in this wood, especially on the hills or moraines, young pitch pines are scarcely to be seen. I saw some only in a dell on the south side the turnpike. If these oaks were cut off with care, there would very soon be a dense white pine wood there. The white pines are not now densely planted, except in some more open places, but come up stragglingly every two or three rods. The natural succession is rapidly going on here, and as fast as an oak falls, its place is supplied by a pine or two. I have no doubt that, *if entirely let alone*, this which is now an oak wood would have become a white pine wood.

Measured on the map, this old woodland is fully a mile and a half long from north to south — one mile being north [of] the turnpike — and will average half a mile from east to west. Its extreme width, measuring due east and west, is from Guggins Brook on the turnpike to the first church. (It runs considerably further southeast, however, on to the high hill.) There is a considerable tract on the small road south [of] the turnpike covered with second growth. There is, therefore, some four hundred acres of this old wood.

There is a very little beech and hemlock and yellow birch in this wood. Many large black birches at the

northwest end. Chestnuts at the northwest and southeast ends.

The bark of the oaks is very frequently gnawed near the base by a squirrel or other animal.

Guggins Brook unites with Heather Meadow Brook, and then with Fort Pond Brook just this side of West Acton, and thus the water of this old oak wood comes into the Assabet and flows by our North Bridge. The seeds of whatever trees water will transport, provided they grow there, may thus be planted along our river.

I crossed the brook in the midst of the wood where there was no path, but four or five large stones had evidently been placed by man at convenient intervals for stepping-stones, and possibly this was an old Indian trail.

You occasionally see a massive old oak prostrate and decaying, rapidly sinking into the earth, and its place is evidently supplied by a pine rather than an oak.

There is now remarkably little life to be seen there. In my two walks I saw only one squirrel and a chickadee. Not a hawk or a jay. Yet at the base of very many oaks were acorn-shells left by the squirrels. In a perfectly round hole made by a woodpecker in a small dead oak five feet from the ground, were three good white oak acorns placed.

In the midst of the wood, west of the brook, is a natural meadow, — *i. e.* in a natural state, — a narrow strip without trees, yet not very wet. Evidently swamp white oaks and maples might grow there. The greater part of this wood is strewn with large rocks, more or less flat or table-like, very handsomely clothed with moss

and polypody. The surface of the ground is finely diversified, there being hills, dells, moraines, meadows, swamps, and a fine brook in the midst of all. Some parts are very thickly strewn with rocks (as at the northwest), others quite free from them. Nowhere any monotony.

It is very pleasant, as you walk in the shade below, to see the cheerful sunlight reflected from the maze of oak boughs above. They would be a fine sight after one of those sticking snows in the winter.

On the north end, also, the first evidence we had that we were coming out of the wood — approaching its border — was the crowing of a cock.

Nov. 17. P. M. — To Blood's woods.

Sawed off a branch of creeping juniper two inches [in] diameter with fifteen rings.

On one square of nine rods in Blood's wood, which seemed more dense than the average, are thirteen sizable trees. This would give about two hundred and thirty to an acre, but probably there are not more than one hundred and eighty to an acre, take the wood through. This is but little more than one to a square rod. Yet this is a quite dense wood. That very solid white oak stump recently sawed in this wood was evidently a seedling, the growth was so extremely slow at first. If I found the case to be the same with the other oaks here, I should feel sure that these were all seedlings and therefore had been preceded by pines or at least some dense evergreens, or possibly birches. When I find a dense oak wood, whether sprouts or

seedlings, I affirm that evergreens once stood [there] and, if man does not prevent, will grow again. This I must believe until I find a dense oak wood planted under itself or in open land.

Minot Pratt's elm is sixteen and a quarter feet [in] circumference at three feet.

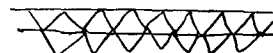
These tawny-white oaks are thus by their color and character the lions among trees, or rather, not to compare them with a foreign animal, they are the cougars or panthers — the American lions — among the trees, for nearly such is that of the cougar which walks beneath and amid or springs upon them. There is plainly this harmony between the color of our chief wild beast of the cat kind and our chief tree.

How they do things in West Acton. As we were walking through West Acton the other afternoon, a few rods only west of the centre, on the main road, the Harvard turnpike, we saw a rock larger than a man could lift, lying in the road, exactly in the wheel-track, and were puzzled to tell how it came there, but supposed it had slipped off a drag. — yet we noticed that it was peculiarly black. Returning the same way in the twilight, when we had got within four or five rods of this very spot, looking up, we saw a man in the field, three or four rods on one side of that spot, running off as fast as he could. By the time he had got out of sight over the hill it occurred to us that he was blasting rocks and had just touched one off: so, at the eleventh hour, we turned about and ran the other way, and when we had gone a few rods, off went two blasts, but fortunately none of the rocks struck us. Some time after we had

passed we saw the men returning. They looked out for themselves, but for nobody else. This is the way they do things in West Acton. We now understood that the big stone was blackened by powder.

Silas Hosmer tells me how — and — sold the Heywood lot between the railroad and Fair Haven.

They lotted it off in this wise:



i. e. in triangles, and, carry-

ing plenty of liquor, they first treated all round, and then proceeded to sell at auction, but the purchasers, excited with liquor, were not aware when the stakes were pointed out that the lots were not as broad in the rear as in front, and the wood standing cost them as much as it should have done delivered at the door.

I frequently see the heads of teasel, called fuller's thistle, floating on our river, having come from factories above, and thus the factories which use it may distribute its seeds by means of the streams which turn their machinery, from one to another. The one who first cultivated the teasel extensively in this town is said to have obtained the seed when it was not to be purchased — the culture being monopolized — by sweeping a wagon which he had loaned to a teasel-raiser.

The growth of very old trees, as appears by calculating the bulk of wood formed, is feebler at last than when in middle age, or say in pitch pine at one hundred and sixty than at forty or fifty, especially when you consider the increased number of leaves, and this, together with the fact that old stumps send up no shoots, shows that trees are not indefinitely long-lived.

I have a section of a chestnut sprout — and not at

all a rank one — which has 6 rings in the first inch, or 4 rings in five eighths of an inch, but a section of a chestnut seedling has 10 rings in five eighths of an inch.

A section of a white oak sprout, far from rank, has 4 rings in first five eighths of an inch; of a seedling ditto, 16 or 17 in first five eighths of an inch; of a seedling ditto, 8 — in first five eighths of an inch; of a very slow-grown sprout, 6 — in first five eighths of an inch. Or in the white oaks the proportion is as five to twelve.

The first seedling oak has the rough and tawny light-brown bark of an old tree, while the first sprout is quite smooth-barked.

A seedling white birch has 10 rings in first seven eighths of an inch.

A sprout white birch has 5 rings in first seven eighths of an inch. The first has the white bark of an old tree; the second, a smooth and reddish bark.

When a stump is sound to the pith I can commonly tell whether it was a seedling or a sprout by the rapidity of the growth at first. A seedling, it is true, may have died down many times till it is fifteen or twenty years old, and so at last send up a more vigorous shoot than at first, but generally the difference is very marked.

Nov. 19. P. M. — To Mt. Misery.

Saw off a hickory stump which is scarcely six and a half inches in diameter and has nearly a hundred rings. (It is the one of November 13th, and then called about 115 (??). Counting it now in the evening, I make 92.) It is surprising how quickly this wood decays. This tree was cut last winter, and then evidently was per-

fectly sound, as appears from the surface, but on sawing it off three inches lower I find that it is rotted entirely through and is soft and no part sound, so that I cannot count it on the new face. In less than one year this stump is worthless, even for fuel!

I look again at the old oak stumps on this hill. One evidently, *i. e. surely*, a sprout (the older stump beside it), a white oak, grew nearly $1\frac{5}{8}$ inches in the first twelve years; another oak, a sprout (with older stump), $1\frac{5}{8}$ inches in the first eleven or twelve years; a white oak (without an older stump), $1\frac{5}{8}$ inches in the first twelve years; probably the last a sprout also, for, as seen on last page, a white oak seedling grows only $\frac{5}{8}$ of an inch in twelve years. There was also a hickory sprout stump of the same age with the others, though of course the old stump was long since gone. It was plainly seen to be a sprout by the very rapid growth at first and the concave form of one side.

My rule of small white pines under pitch pines is so true of E. Hoar's land that he very easily got a hundred white pines there to set by his house.

Mr. Bradshaw says that he got a little auk in Wayland last week, and heard of two more, one in Weston and the other in Natick. Thinks they came with the storm of the 10th and 11th.

He tells me of a small oak wood of old trees called More's, half a mile east of Wayland, behind the graveyard.

Nov. 20. P. M. — To R. W. E.'s hill.

I see a pitch pine several years old on the west slope

of the railroad embankment, sixty rods by pacing from the nearest pitch pine, which was in Trillium Wood. I have seen several such. This tree would soon sow itself in our yards if they were neglected.

In the Moore and Hosmer lot which I surveyed in '49-'50, beyond Heywood meadow, a white oak stump ten inches [in] diameter with seventy rings (cut in winter of '49-'50), evidently a sprout, though the old stump appears to have been entirely overgrown and so concealed.

I see, on the southwest or railroad side, near top, of Emerson's hill, a great many oak stumps (which were sprouts) with the older stump still very plain.

One (probably black oak) with 35 rings cut some 2 years = 37.

2d, " " " " " " " " " " = 37.

3d, " " " " " " " " " " = 37.

(This last *old* stump being small and almost overgrown between the stumps of the sprouts and seen — a sliver of it — in a hole between them.) Also lower down-hill, toward railroad, old chestnut stumps with the stumps of sprouts of R. W. E.'s cutting twenty-five to thirty and odd years old, cut some dozen years ago; stumps, then, some forty years old.

Also, on the pond end of the hilltop, amid the piles of stones, where I suppose was a pasture once, I see oak stumps cut just thirty-eight years ago beside the stumps of their sprouts cut last winter, and here are many sprouts coming up the second time; but on the other end [of] the hill I notice no sprouts the second time. There were many oaks where these piles of stone are, some seventy or eighty years ago, then, at least, and I

think that if this ever was a pasture they must have been preceded by pines. These oak stumps, cut about thirty-eight years ago, are quite fresh, especially the white oak on the top of this rocky hill. So at Mt. Misery. Such is evidently a favorable locality for their preservation. Indeed, it is very common to see oak stumps forty years old in such places. They are the rule here.

Decidedly finger-cold to-night.

Nov. 21. If you cut a dense mixed wood of pine and oak in which no little pines have sown themselves, it is evident that a wood exclusively of oak sprouts may succeed, as I see is the case with part of R. W. E.'s hillside toward the pond.

I see a little pitch pine which bore a cone at twenty-two inches from the ground when it was only seven or eight years old. It is now a dozen years old and has borne two more since, and scattered the seed.

P. M. — To Fair Haven Hill.

On what was Stow's lot, southwest the Boiling Spring, adjacent to Wheeler's field, I count the rings of four oak stumps which are from eighteen to twenty-two inches in diameter. They are all about 120, and the oaks are evidently all from the seed. This was both a pine and oak wood, and I suspect that about one hundred and twenty years [ago] pines were cut or burned or blown down or decayed there and these oaks succeeded. These stumps are now in the very best condition for counting, having been cut nine or ten years ago. But not so with the pitch pine stumps

(one is twenty-three inches in diameter) cut about a year later on what was R. Brown's, higher up. Their sap and more is covered with green and red cockspur lichens so thickly you cannot see the rings. On this lot (now open Wheeler lot) are not only these old pitch pine stumps (a few), but the stumps of oak sprouts forty-four years old, with the older stumps by their side, or half overgrown, yet quite plain, which last there were cut ($44 + 9 =$) 53 years ago. No sprouts from them.

In early times probably less wood was cut at once; commonly only the winter's wood for the owners' use. This Brown lot was variously treated apparently.

See young beeches near the upper edge of Stow's, about midway on Wheeler, near where some stones have been hauled into Stow's from Wheeler's land.

Another finger-cold evening, which I improve in pulling my turnips — the usual amusement of such weather — before they shall be frozen in. It is worth the while to see how green and lusty they are yet, still adding to their stock of nutriment for another year; and between the green and also withering leaves it does me good to see their great crimson round or scalloped tops, sometimes quite above ground, they are so bold. They remind you of rosy cheeks in cool weather, and indeed there is a relationship. All kinds of harvestry, even pulling turnips when the first cold weather numbs your fingers, are interesting, if you have been the sower, and have not sown too many.

Got a section to-day of a white cedar railroad sleeper which I am told came from the eastward and was

brought up from Charlestown. First count gives 254 rings; second, on opposite side, where the centre is less plain, 246 rings; average, 250. Its diameter is $16\frac{1}{4}$ inches, or nearly 31 rings to an inch. This is the oldest, as well as slowest-growing, tree that I have counted the rings of. I see other sleepers nearly as old. Some smaller, or say $10\frac{1}{2}$ inches in diameter, had 125 rings in the first three inches and then grew much faster; as if they were at first part of a very dense thicket and grew very slowly, but afterward, prevailing over the rest, grew faster. This sleeper had, of course, been cut a year at least. It may not have been the butt end of the log, or at any rate it must have been several years old before it reached the height at which it was cut, so that it must have begun to exist before the settlement of Jamestown. It was a flourishing young cedar of at least some fifteen summers when the Pilgrims came over. Thus the cars on our railroad, and all their passengers, roll over the trunks of trees *sleeping* beneath them which were planted years before the first white man settled in New England.

Nov. 22. P. M. — To northwest part of Sudbury.

The *Linaria Canadensis* is still freshly blooming. It is the freshest flower I notice now.

Considerable ice, lasting all day, on the river meadows and cold pools.

I measure the stump of that white pine which I used to see on the Marlborough road. It is thirty inches in diameter and has 85 rings.

There are two small clumps of laurel close to the

left side this road, by the woods, just this side the Sudbury line, going to Maynard's.

Here is a dense oak wood. I see many little white pines sprung up along its edge in the road, but scarcely one within the wood. They, too, want light and air, though not so much as the pitch pine.

All the sound white oak acorns that I see now have sprouted, and many have sent a root down into the earth. This is often four inches long. But I see no black nor scarlet nor red oak acorns sprouted, though I find sound ones. The white are evidently very much more sensitive and tender than they.

This is a very beautiful November day, — a cool but clear, crystalline air, through which even the white pines with their silvery sheen are an affecting sight. It is a day to behold and to ramble over the hard (stiffening) and withered surface of the tawny earth. Every plant's down glitters with a silvery light along the Marlborough road, — the sweet-fern, the lespedeza, and bare blueberry twigs, to say nothing of the weather-worn tufts of *Andropogon scoparius*. A thousand bare twigs gleam like cobwebs in the sun. I rejoice in the bare, bleak, hard, and barren-looking surface of the tawny pastures, the firm outline of the hills, so convenient to walk over, and the air so bracing and wholesome. Though you are finger-cold toward night, and you cast a stone on to your first ice, and see the unmelted crystals under every bank, it is glorious November weather, and only November fruits are out. On some hickories you see a thousand black nuts against the sky.

There is quite a white cedar swamp behind the old tavern south of Maynard's.

You walk fast and far, and every apple left out is grateful to your invigorated taste. You enjoy not only the bracing coolness, but all the heat and sunlight that there is, reflected back to you from the earth. The sandy road itself, lit by the November sun, is beautiful. Shrub oaks and young oaks generally, and hazel bushes and other hardy shrubs, now more or less bare, are your companions, as if it were an iron age, yet in simplicity, innocence, and strength a golden one.

(Day before yesterday the rustling of the withered oak leaves in the wind reminded me of the similar sound produced by snow falling on them.)

It is glorious to consider how independent man is of all enervating luxuries; and the poorer he is in respect to them, the richer he is. Summer is gone with all its infinite wealth, and still nature is genial to man. Though he no longer bathes in the stream, or reclines on the bank, or plucks berries on the hills, still he beholds the same inaccessible beauty around him. What though he has no juice of the grape stored up for him in cellars; the air itself is wine of an older vintage, and far more sanely exhilarating, than any cellar affords. It is ever some gouty senior and not a blithe child that drinks, or cares for, that so famous wine.

Though so many phenomena which we lately admired have now vanished, others are more remarkable and interesting than before. The smokes from distant chimneys, not only greater because more fire is required, but more distinct in the cooler atmosphere, are a very pleasing

sight, and conduct our thoughts quickly to the roof and hearth and family beneath, revealing the homes of men.

Maynard's yard and frontage, and all his barns and fences, are singularly neat and substantial, and the highroad is in effect converted into a private way through his grounds. It suggests unspeakable peace and happiness. Yet, strange to tell, I noticed that he had a tiger instead of a cock for a vane on his barn, and he himself looked overworked. He had allowed the surviving forest trees to grow into ancestral trees about his premises, and so attach themselves to him as if he had planted them. The dusty highway was so subdued that it seemed as if it were lost there. He had all but stretched a bar across it. Each traveller must have felt some misgivings, as if he were trespassing.

However, the farmer's life expresses only such content as an ox in his yard chewing the cud.

What though your hands are numb with cold, your sense of enjoyment is not benumbed. You cannot now find an apple but it is sweet to taste.

Simply to see to a distant horizon through a clear air, — the fine outline of a distant hill or a blue mountain-top through some new vista, — this is wealth enough for one afternoon.

We journeyed into the foreign land of Sudbury to see how the Sudbury men — the Hayneses, and the Puffers, and the Brighams — live. We traversed their pastures and their wood-lots, and were home again at night.

Nov. 23. George Minott tells me that sixty years ago wood was only two or three dollars a cord here — and

some of that hickory. Remembers when Peter Wheeler, sixty or more years ago, cut off all at once over a hundred acres of wood stretching from Flint's Pond to Goose Pond, — since cut again in part by Britton, and owned now partly by the Stows.

Most of us are still related to our native fields as the navigator to undiscovered islands in the sea. We can any autumn discover a new fruit there which will surprise us by its beauty or sweetness. So long as I saw one or two kinds of berries in my walks whose names I did not know, the proportion of the unknown seemed indefinitely if not infinitely great.

Famous fruits imported from the tropics and sold in our markets — as oranges, lemons, pineapples, and bananas — do not concern me so much as many an unnoticed wild berry whose beauty annually lends a new charm to some wild walk, or which I have found to be palatable to an outdoor taste.

The tropical fruits are for those who dwell within the tropics; their fairest and sweetest parts cannot be exported nor imported. Brought here, they chiefly concern those whose walks are through the market-place. It is not the orange of Cuba, but the checkerberry of the neighboring pasture, that most delights the eye and the palate of the New England child. What if the Concord Social Club, instead of eating oranges from Havana, should spend an hour in admiring the beauty of some wild berry from their own fields which they never attended to before? It is not the foreignness or size or nutritive qualities of a fruit that determine its absolute value.

It is not those far-fetched fruits which the speculator imports that concerns us chiefly, but rather those which you have fetched yourself in your basket from some far hill or swamp, journeying all the long afternoon in the hold of a basket, consigned to your friends at home, the first of the season.

We cultivate imported shrubs in our front yards for the beauty of their berries, when yet more beautiful berries grow unregarded by us in the surrounding fields.

As some beautiful or palatable fruit is perhaps the noblest gift of nature to man, so is a fruit with which a man has in some measure identified himself by cultivating or collecting it one of the most suitable presents to a friend. It was some compensation for Commodore Porter, who may have introduced some cannon-balls and bombshells into ports where they were not wanted, to have introduced the Valparaiso squash into the United States. I think that this eclipses his military glory.

As I sail the unexplored sea of Concord, many a dell and swamp and wooded hill is my Ceram and Amboyna.

At first, perchance, there would be an abundant crop of rank garden weeds and grasses in the cultivated land, — and rankest of all in the cellar-holes, — and of pinweed, hardhack, sumach, blackberry, thimble-berry, raspberry, etc., in the fields and pastures. Elm, ash, maples, etc., would grow vigorously along old garden limits and main streets. Garden weeds and grasses would soon disappear. Huckleberry and blueberry bushes, lambkill, hazel, sweet-fern, barberry, elder, also shad-bush, choke-berry, andromeda, and thorns,

etc., would rapidly prevail in the deserted pastures. At the same time the wild cherries, birch, poplar, willows, checkerberry would reëstablish themselves. Finally the pines, hemlock, spruce, larch, shrub oak, oaks, chestnut, beech, and walnuts would occupy the site of Concord once more. The apple and perhaps all exotic trees and shrubs and a great part of the indigenous ones named above would have disappeared, and the laurel and yew would to some extent be an underwood here, and perchance the red man once more thread his way through the mossy, swamp-like, primitive wood.

Nov. 24. P. M. — To Easterbrooks's.

Under the two white oaks by the second wall southeast of my house, on the east side the wall, I am surprised to find a great many sound acorns still, though every one is sprouted, — frequently more than a dozen on the short sward within a square foot, each with its radicle two inches long penetrated into the earth. But many have had their radicle broken or eaten off, and many have it now dead and withered. So far as my observation goes there, by far the greatest number of white oak acorns were destroyed by decaying (whether in consequence of frost or wet), both before and soon after falling. Not nearly so many have been carried off by squirrels and birds or consumed by grubs, though the number of acorns of all kinds lying under the trees is now comparatively small to what it was early in October.

It is true these two trees are exceptions and I do not find sound ones nearly as numerous under others.

Nevertheless, the sound white oak acorns are not so *generally* and *entirely* picked up as I supposed. However, there are a great many more shells or cups than acorns under the trees; even under these two trees, I think, there are not more than a third as many of any kind — sound or hollow — as there were, and generally those that remain are a very small fraction of what there were. It will be worth the while to see how many of these sprouted acorns are left and are sound in the spring. It is remarkable that all sound white oak acorns (and many which are not now sound) are sprouted, and that I have noticed no other kind sprouted, — though I have not seen the chestnut oak and little chinquapin at all. It remains to be seen how many of the above will be picked up by squirrels, etc., or destroyed by frost and grubs in the winter.

The first spitting of snow — a flurry or squall — from out a gray or slate-colored cloud that came up from the west. This consisted almost entirely of pellets an eighth of an inch or less in diameter. These drove along almost horizontally, or curving upward like the outline of a breaker, before the strong and chilling wind. The plowed fields were for a short time whitened with them. The green moss about the bases of trees was very prettily spotted white with them, and also the large beds of *cladonia* in the pastures. They come to contrast with the red cockspur lichens on the stumps, which you had not noticed before. Striking against the trunks of the trees on the west side they fell and accumulated in a white line at the base. Though a slight touch, this was the first wintry scene of the season. The air

was so filled with these snow pellets that we could not see a hill half a mile off for an hour. The hands seek the warmth of the pockets, and fingers are so benumbed that you cannot open your jack-knife. The rabbits in the swamps enjoy it, as well as you. Methinks the winter gives them more liberty, like a night. I see where a boy has set a box trap and baited it with half an apple, and, a mile off, come across a snare set for a rabbit or partridge in a cow-path in a pitch pine wood near where the rabbits have nibbled the apples which strew the wet ground. How pitiable that the most that many see of a rabbit should be the snare that some boy has set for one!

The bitter-sweet of a white oak acorn which you nibble in a bleak November walk over the tawny earth is more to me than a slice of imported pineapple. We do not think much of table-fruits. They are especially for aldermen and epicures. They do not feed the imagination. That would starve on them. These wild fruits, whether eaten or not, are a dessert for the imagination. The south may keep her pineapples, and we will be content with our strawberries.

Nov. 25. I count the rings in a spruce plank from the railroad bridge, which extend five and a half inches from the centre of the tree, and make them $146, - \frac{1}{26} +$ to a ring. This is slower growth than I find in a black spruce to-day at —

Ministerial Swamp, P. M. — It is $10\frac{1}{2}$ feet high, $2\frac{1}{2}$ inches [in] diameter just above ground, and has 21 rings, $\frac{1}{17}$ inch to a ring. A larch near by is 21 feet

high, $2\frac{1}{8}$ inches [in] diameter, and has 20 rings, which makes $\frac{1}{4}$ + to a ring. The larch has made nearly twice as much wood as the spruce in the same time.

The cones of the spruce which I see are still closed. A few sugar maple seeds still hang on.

Last night and to-day are very cold and blustering. Winter weather has come suddenly this year. The house was shaken by wind last night, and there was a general deficiency of bedclothes. This morning some windows were as handsomely covered with frost as ever in winter. I wear mittens or gloves and my greatcoat. There is much ice on the meadows now, the broken edges shining in the sun. Now for the phenomena of winter, — the red buds of the high blueberry and the purple berries of the smilax.

As I go up the meadow-side toward Clamshell, I see a very great collection of crows far and wide on the meadows, evidently gathered by this cold and blustering weather. Probably the moist meadows where they feed are frozen up against them. They flit before me in countless numbers, flying very low on account of the strong northwest wind that comes over the hill, and a cold gleam is reflected from the back and wings of each, as from a weather-stained shingle. Some perch within three or four rods of me, and seem weary. I see where they have been pecking the apples by the meadow-side. An immense cohort of cawing crows which sudden winter has driven near to the habitations of man. When I return after sunset I see them collecting and hovering over and settling in the dense pine woods west of E. Wood's, as if about to roost there. Yesterday I

saw one flying over the house, its wings so curved by the wind that I thought it a black hawk.

How is any scientific discovery made? Why, the discoverer takes it into his head first. He must all but see it.

I see several little white pines in Hosmer's meadow just beyond Lupine Hill, which must have sprung from seed which came some fifty rods, — probably blown so far in the fall. There are also a few in the road beyond Dennis's, which probably were blown from his swamp wood. So that there is nothing to prevent their springing up all over the village in a very few years — but our own plows and spades. They have also come up quite numerously in the young woodland north of J. P. B.'s Cold Pool (probably blown from the wood south of the pond), though they are evidently half a dozen years younger than the oaks there. I look at this large white pine wood by the pool to see if little ones come up under it. What was recently pasture comes up within a rod of this high wood on the north side, and, though the fence is gone, the different condition and history of the ground is very apparent by the different aspect of the little pines. There the old white pines are dense, and there are no little ones under them, but only a rod north they are very abundant, forming a dense thicket only two or three feet high bounded by a straight line on the south (or east and west), where the edge of the open land was within a rod of the great pines. Here they sprang up abundantly in the open land close by, but not at all under the pines. Yet within the great wood, wherever it is more open from any cause, I see a great many little pines springing up. Though they are thin and

feeble comparatively, yet most of them will evidently come to be trees. White pines will spring up in the more open parts of a white pine wood, even under pines, though they are thin and feeble just in proportion to the density of the larger pines, and, where the large trees are quite dense, they will not spring up at all.

How commonly you see pitch pines, white pines, and birches filling up a pasture, and, when they are a dozen or fifteen years old, shrub and other oaks beginning to show themselves, inclosing apple trees and walls and fences gradually and so changing the whole aspect of the region. These trees do not cover the whole surface equally at present, but are grouped very agreeably after natural laws which they obey. You remember, perhaps, that fifteen years ago there was not a single tree in this pasture, — not a germinating seed of one, — and now it is a pretty dense forest ten feet high. I confess that I love to be convinced of this inextinguishable vitality in Nature. I would rather that my body should be buried in a soil thus wide-awake than in a mere inert and dead earth. The cow-paths, the hollows where I slid in the winter, the rocks, are fast being enveloped and becoming rabbit-walks and hollows and rocks in the woods.

How often you make a man richer in spirit in proportion as you rob him of earthly luxuries and comforts!

I see much oak wood cut at thirty years of age, — sprout wood.

Many stumps which have only twenty-five or thirty rings send up no shoots, because they are the sprouts

from old stumps, which you may still see by their sides, and so are really old trees and exhausted. The chopper should foresee this when he cuts down a wood.

The bass by Dugan's cut a year ago. It is hard to count, so indistinct its rings, but I make 46 to 50 in a diameter of some twenty inches. The sprouts are quite peculiar, so light an ash-color with red tips and large blunt red buds.

The old pitch pines (*vide* back two or three weeks) one hundred and sixty years old, that stood on the south side of the Tommy Wheeler hollow, were twenty-three in number on a space about twelve rods by three (or thirty-six rods), with half a dozen white pines and as many oaks, the last two say twenty to fifty years younger than the pitch pines. Probably some of the pitch pines have died and left no trees, so that it may originally have been a pretty dense grove of pitch pines. There were as many more pitch pines (not to mention the oaks and white pines) on the other side of the hollow. These were on a slope toward the north. Now, four years after they were cut, this hillside is covered with hazel bushes, huckleberries, young oaks, red maples, *Viburnum nudum*, and a few little white pines, but the hollow below them has little beside grass (fine sedge) in it. It will be long before anything catches there. It is remarkable that no pitch pines grew there before, nor oaks, and very few white pines, which were the only trees there.

Some pitch pines have shed their seeds.

Nov. 26. P. M. — To E. Hubbard's Wood.

I see in the open field east of Trillium Wood a few

pitch pines springing up, from seeds blown from the wood a dozen or fifteen rods off. Here is one just noticeable on the sod — though by most it would be mistaken for a single sprig of moss — which came from the seed this year. It is, as it were, a little green star with many rays, half an inch in diameter, lifted an inch and a half above the ground on a slender stem. What a feeble beginning for so long-lived a tree! By the next fall it will be a star of greater magnitude, and in a few years, if not disturbed, these seedlings will alter the face of nature here. How significant, how ominous, the presence of these green moss-like stars is to the grass, heralding its doom! Thus from pasture this portion of the earth's surface becomes forest. These which are now mistaken for mosses in the grass may become lofty trees which will endure two hundred years, under which no vestige of this grass will be left.

In Hubbard's Wood at north end I measure the stump of either a red or black oak: 21 inches [in] diameter and 141 rings.

I examine quite a number of oak stumps thereabouts and find them all seedlings. This, of course, must be the case with old forests generally, for in the beginning the trees were not cut.

A red oak about in middle of the wood	6½ feet	circumference	at 3 ft.
A canoe birch,	45 inches	"	" " "
Another " "	45½ "	"	" " "
A white oak on the east side rather toward south,	7 feet	"	" " "

Some of the white oaks have a very loose scaly bark, commencing half a dozen feet from the ground. I see

pitch pine bark four to five inches thick at the ground. There are in this wood many little groves of white pines two to four feet high, quite dense and green, but these are in more open spaces, and are vigorous just in proportion to the openness. There are also seedling oaks and chestnuts ten to thirty years old, yet not nearly so numerous as the pines. The large wood is mixed oak and pine, — more oak at the north and more pine, especially pitch pine, at the south. The prospect is that in course of time the white pines will very greatly prevail over all other trees here. This is also the case with Inches', Blood's, and Wetherbee's woods.

If I am not mistaken, an evidence of more openness where the little pines are is to be found in the greater prevalence of *pyrola* and *lycopodiums* there. There are even some healthy *Juniperus repens* in the midst of these woods. Though the pitch pines are the prevailing trees at the south end, I see no young pitch pines under them.

Perhaps this is the way that a natural succession takes place. Perhaps oak seedlings do not so readily spring up and thrive within a mixed white pine and oak wood as pines do, — in the more open parts, — and thus, as the oaks decay, they are replaced by pines rather than by oaks.

But where did the pitch pines stand originally? Who cleared the land for its seedlings to spring up in? It is commonly referred to very poor and sandy land, yet I find it growing on the best land also. The expression "a pitch pine plain" is but another name for a poor and sandy level. It grows both on the sand and [in] the

swamp, and the fact that it grows on the sand chiefly is not so much evidence that it prefers it as that other trees have excluded it from better soil. If you cut down the pines on the pitch pine plain, oaks will come up there too. Who knows but the fires or clearings of the Indians may have to do with the presence of these trees there? They regularly cleared extensive tracts for cultivation, and these were always level tracts where the soil was light — such as they could turn over with their rude hoes. Such was the land which they are known to have cultivated extensively in this town, as the Great Fields and the rear of Mr. Dennis's, — sandy plains. It is in such places chiefly that you find their relics in any part of the county. They did not cultivate such soil as our maple swamps occupy, or such a succession of hills and dales as this oak wood covers. Other trees will grow where the pitch pine does, but the former will maintain its ground there the best. I know of no tree so likely to spread rapidly over such areas when abandoned by the aborigines as the pitch pines — and next birches and white pines.

While I am walking in the oak wood or counting the rings of a stump, I hear the faint note of a nuthatch like the creak of a limb, and detect [it] on the trunk of an oak much nearer than I suspected, and its mate or companion not far off. This is a constant phenomenon of the late fall or early winter; for we do not hear them in summer that I remember.¹ I heard one not long since in the street.

I see one of those common birch fungi on the side of

¹ In '61 hear one occasionally a month earlier than this.

a birch stake which has been used to bound a lot sold at auction, three feet or more from the ground, and its face is toward the earth as usual, though the birch is bottom up.

I saw that nuthatch to-day pick out from a crevice in the bark of an oak trunk, where it was perpendicular, something white once or twice and pretty large. May it not have been the meat of an acorn? Yet commonly they are steadily hopping about the trunks in search of insect food. Possibly some of those acorn-shells I see about the base of trees may have been dropped from the crevices in the bark above by birds — nuthatch or jay — as well as left by squirrels.

Mother says that Lidy Bay, an Indian woman (so considered), used to live in the house beyond Caesar's and made baskets, which she brought to town to sell, with a ribbon about her hat. She had a husband.

The value of these wild fruits is not in the mere possession or eating of them, but in the sight or enjoyment of them. The very derivation of the word "fruit" would suggest this. It is from the Latin *fructus*, meaning that which is *used* or *enjoyed*. If it were not so, then going a-berrying and going to market would be nearly synonymous expressions. Of course it is the spirit in which you do a thing which makes it interesting, whether it is sweeping a room or pulling turnips. Peaches are unquestionably a very beautiful and palatable fruit, but the gathering of them for the market is not nearly so interesting as the gathering of huckleberries for your own use.

A man fits out a ship at a great expense and sends it to the West Indies with a crew of men and boys,

and after six months or a year it comes back with a load of pineapples. Now, if no more gets accomplished than the speculator commonly aims at, — if it simply turns out what is called a successful venture, — I am less interested in this expedition than in some child's first excursion a-huckleberrying, in which it is introduced into a new world, experiences a new development, though it brings home only a gill of huckleberries in its basket. I know that the newspapers and the politicians declare otherwise, but they do not alter the fact. Then, I think that the fruit of the latter expedition was finer than that of the former. It was a more fruitful expedition. The value of any experience is measured, of course, not by the amount of money, but the amount of development we get out of it. If a New England boy's dealings with oranges and pineapples have had more to do with his development than picking huckleberries or pulling turnips have, then he rightly and naturally thinks more of the former; otherwise not.

Do not think that the fruits of New England are mean and insignificant, while those of some foreign land are noble and memorable. Our own, whatever they may be, are far more important to us than any others can be. They educate us, and fit us to live in New England. Better for us is the wild strawberry than the pineapple, the wild apple than the orange, the hazelnut or pignut than the cocoanut or almond, and not on account of their flavor merely, but the part they play in our education.

In the Massachusetts Historical Collections, First Series, volume x, Rev. John Gardner of Stow furnishes

a brief historical notice of that town in a letter dated 1767. He says, "The Indian names of this place were Pompoicicut and Shabbukin, from two notable hills."

I anticipated the other day that if anybody should write the history of Boxboro, once a part of Stow, he would be pretty sure to omit to notice the most interesting thing in it — its forest — and lay all the stress on the history of its parish; and I find that I had conjectured rightly, for Mr. Gardner, after telling us who was his predecessor in the ministry and where he himself was settled, goes on to say: "As for any remarkable, I am of the mind there have been the fewest of any town of our standing in the Province. . . . I can't call to mind above one thing worthy of public notice, and that is the grave of Mr. John Green," who, it appears, "was made . . . clerk of the exchequer" by Cromwell. "Whether he was excluded the Act of Oblivion or not I cannot tell," says Mr. Gardner. At any rate he tells us that he returned to New England, "lived and died, and lies buried in this place." I can assure Mr. Gardner that he was not excluded from the act of oblivion.

However, Boxboro was less peculiar for its woods a hundred years ago.

I have been surprised when a young man who had undertaken to write the history of a country town, — his native place, — the very name of which suggested a hundred things to me, referred to it, as the crowning fact of his story, that that town was the residence of General So-and-so and the family mansion was still standing.

Nov. 28. P. M. — To Annursnack.

Looking from the hilltop, I should say that there was more oak woodland than pine to be seen, especially in the north and northeast, but it is somewhat difficult to distinguish all in the gleaming sunlight of mid-afternoon. Most of the oak, however, is quite young. As for pines, I cannot say surely which kind is most prevalent, not being certain about the most distant woods. The white pine is much the most dispersed, and grows oftener in low ground than the pitch pine does. It oftenest forms mixed woods with oak, etc., growing in straight or meandering lines, occasionally swelling into a dense grove. The pitch pines commonly occupy a dry soil — a plain or brow of a hill, often the site of an old grain-field or pasture — and are much the most seclusive, for, being a new wood, oaks, etc., have had no opportunity to grow up there, if they could. I look down now on the top of a pitch pine wood southwest of Brooks's Pigeon-place, and its top, so nearly level, has a peculiarly rich and crispy look in the sun. Its limbs are short and its plumes stout as compared with the white pine and are of a yellowish green.

There are many handsome young walnuts ten or twelve feet high scattered over the southeast side of Annursnack, or above the orchard. How came they there? Were they planted before a wood was cut? It is remarkable how this tree loves a hillside.

Behind G. M. Barrett's barn a scarlet oak stump 18½ inches [in] diameter and about 94 rings, which has sent up a sprout two or three years since. On the plain just north of the east end of G. M. B.'s oaks,

many oaks were sawed off about a year ago. Those I look at are seedlings and very sound and rings very distinct and handsome. Generally no sprouts from them, though one white oak sprout had been killed by frost. One white oak, 17 inches [in] diameter, has 100 rings. A second, 16½ “ “ “ also 100 “

The last has two centres which coalesced at the thirtieth ring, which went round them both including old bark between them. This was an instance of natural grafting.

Many seem to be so constituted that they can respect only somebody who is dead or something which is distant.

The less you get, the happier and the richer you are. The rich man's son gets cocoanuts, and the poor man's, pignuts; but the worst of it is that the former never goes a-cocoanutting, and so he never gets the cream of the cocoanut as the latter does the cream of the pignut.

That on which commerce seizes is always the very coarsest part of a fruit, — the mere husk and rind, in fact, — for her hands are very clumsy. This is what fills the holds of ships, is exported and imported, pays duties, and is finally sold at the shops.

It is a grand fact that you cannot make the finer fruits or parts of fruits matter of commerce. You may buy a servant or slave, in short, but you cannot buy a friend. You can't buy the finer part of any fruit — *i. e.* the highest use and enjoyment of it. You cannot buy the pleasure which it yields to him who truly plucks it; you can't buy a good appetite even.

What are all the oranges imported into England to the hips and haws in her hedges? She could easily spare the one, but not the others. Ask Wordsworth, or any of her poets, which is the most to him.

The mass of men are very easily imposed on. They have their runways in which they always travel, and are sure to fall into any pit or box trap set therein. Whatever a great many grown-up boys are seriously engaged in is considered great and good, and, as such, is sure of the recognition of the churchman and statesman. What, for instance, are the blue juniper berries in the pasture, which the cowboy remembers so far as they are beautiful merely, to church or state? Mere trifles which deserve and get no protection. As an object of beauty, though significant to all who really live in the country, they do not receive the protection of any community. Anybody may grub up all that exist. But as an article of commerce they command the attention of the civilized world. I read that "several hundred tons of them are imported annually from the continent" into England to flavor gin with: "but even this quantity," says my author, "is quite insufficient to meet the enormous consumption of the fiery liquid, and the deficiency is made up by spirits of turpentine." Go to the English Government, which, of course, is representative of the people, and ask, What is the use of juniper berries? The answer is, To flavor gin with. This is the gross abuse of juniper berries, with which an enlightened Government — if ever there shall be one — will have nothing to do.

Let us make distinctions, call things by the right names.

Nov. 29. Get up my boat, 7 A. M. Thin ice of the night is floating down the river. I hear that some boys went on to Goose Pond on the 26th and skated. It must have been thin.

P. M. — To Fair Haven Hill.

The pitch pine twigs have been so generally cut off by the squirrels for the sake of the cones that I easily detect the fertile trees, when going through a pitch pine wood, by seeing the green twigs strewn on the ground beneath. But few of the trees bear, and these are the ones.

The Bear Garden pitch pines are so generally open that young pitch pines of all sizes are intermixed with the others. There are many small white pines beside, but few if any seed-bearing ones.

I proceed through Potter's young wood south of this grove (toward Fair Haven Hill-side) and here I find by the stumps what I remember, — that a pitch pine wood was cut, some ten or twelve years ago, judging from the state of the stumps. It was for density, apparently, such a grove as now stands northward of this. It is a very poor soil. Shrub oaks chiefly appear to have succeeded to the pines, and now the growth consists of oaks, shrub and others (the latter four to six feet high), pitch pines two to ten feet high, and white birches. The soil is but poorly clad, owing to its barrenness and the prevalence of shrub oak at first. Probably the largest of these young pitch pines were such as stood in the open wood when it was cut — as they now do northward; but apparently the majority have been sown since, as others are still being sown by the large pitch

pinces there are left here and there quite numerous, the ground is still so open and bare on account of the feeble growth of the oaks. The white birches have as yet done the best, the pines next. It will ere long be a mixed oak and pitch pine wood, the pines not standing so dense as in new woods, though pretty thick in spots. This shows how a mixed wood of this character may arise, owing first to the existence of young pitch pines under the old when cut, — the latter being so open as to admit of their growth, — and secondly to the barren soil and shrub oaks, which fail to cover it for a long time, so that even after six or eight years pitch pines may catch there from seed-bearing trees which are left.

I am pleased to find an evidence that the pitch pine wood cut down here a dozen years ago was just such a *new* wood as that now standing on [the] north. It is this. Along the southwest edge of this portion of the lot, where the almost abrupt descent begins, I see many stones which were cast over the edge of the bank in great heaps when it was cultivated.

The small pitch pine grove above the western Fair Haven spring fully proves my theory of white pines in pitch pine, though there is hardly a seed-bearing white pine there. Young white pines are rapidly spreading up Fair Haven Hill-side, though the nearest seed-bearing white pines are across the river, thirty to sixty rods off.

I remember when this hillside above the spring was clear of wood. In fact, I was here when this field was cleared and the brush burned, some thirty-five years ago. Yet I now see a good many hickories both within

and without the pines, five feet high, more or less. I feel about sure that these are not from stumps or old roots which have existed in the ground so long. How then did they come here? The[*y*] even keep in advance of the pines on some sides a rod or two further into the open land. I am constrained to believe that they were planted there by quadrupeds or birds. If so, the walnut differs from the oak in the mode of its spreading; for I do not see oaks anywhere thus springing up in groves in grass ground, in advance of pines. It will be worth the while to ascertain the age of these exactly.

It is remarkable that the walnut loves a hillside so. I saw such a grove yesterday on Annursnack. Here is another of still larger trees a little lower down the hill; and there is a much more extensive one on the similar slope of Smith's Hill. Are animals more likely to plant walnuts in open land than acorns? or is it that walnuts are more likely to live there when planted? What a lover of the hills is this tree! I may be mistaken about those on Smith's Hill, after all.

Fair Haven Pond is skimmed over, all but the channel.

Can that be the skeleton of a raccoon which I find (killed not long since) on the Cliff Hill? Measured by my book it — the body from shoulder to tail — is $15\frac{1}{2}$ inches long; tail, $13\frac{1}{2}$; hind leg, $14\frac{1}{2}$. *Vide* skull and foot.

If a man has spent all his days about some business, by which he has merely got to be rich, as it is called, *i. e.*, has got much money, many houses and barns and woodlots, then his life has been a failure, I think; but if he

has been trying to better his condition in a higher sense than this, has been trying to invent something, to be somebody, — *i. e.*, to invent and get a patent for himself, — so that all may see his originality, though he should never get above board, — and great inventors, you know, commonly die poor, — I shall think him comparatively successful.

From the Cliff I see more oak than pine.

Every interest, as the codfish and the mackerel, gets represented but the huckleberry interest. The first discoverers and explorers of the land make report of this fruit, but the last make comparatively little account of them.

You would say that some men had been tempted to live in this world at all only by the offer of a bounty by the general government — a bounty on living — to any one who will consent to be *out* at this era of the world, the object of the governors being to create a nursery for their navy. I told such a man the other day that I had got a Canada lynx here in Concord, and his instant question was, "Have you got the reward for him?" What reward? Why, the ten dollars which the State offers. As long as I saw him he neither said nor thought anything about the lynx, but only about this reward. "Yes," said he, "this State offers ten dollars reward." You might have inferred that ten dollars was something rarer in his neighborhood than a lynx even, and he was anxious to see it on that account. I have thought that a lynx was a bright-eyed, four-legged, furry beast of the cat kind, very *current*, indeed, though its natural gait is by leaps. But he knew it to be a draught drawn

by the cashier of the wildcat bank on the State treasury, payable at sight. Then I reflected that the first money was of leather, or a whole creature (whence *pecunia*, from *pecus*, a herd), and, since leather was at first furry, I easily understood the connection between a lynx and ten dollars, and found that all money was traceable right back to the original wildcat bank. But the fact was that, instead of receiving ten dollars for the lynx which I had got, I had paid away some dollars in order to get him. So, you see, I was away back in a gray antiquity behind the institution of money, — further than history goes.

This reminded me that I once saw a cougar recently killed at the Adirondacks which had had its ears clipped. This was a ten-dollar cougar.

Yet, though money can buy no fine fruit whatever, and we are never made truly rich by the possession of it, the value of things generally is commonly estimated by the amount of money they will fetch. A thing is not valuable — *e. g.* a fine situation for a house — until it is convertible into so much money, that is, can cease to be what it is and become something else which you prefer. So you will see that all prosaic people who possess only the commonest sense, who believe strictly in this kind of wealth, are speculators in fancy stocks and continually cheat themselves, but poets and all discerning people, who have an object in life and know what they want, speculate in real values. The mean and low values of anything depend on it[s] convertibility into something else — *i. e.* have nothing to do with its intrinsic value.

This world and our life have practically a similar value only to most. The value of life is what anybody will give you for living. A man has his price at the South, is worth so many dollars, and so he has at the North. Many a man here sets out by saying, I will make so many dollars by such a time, or before I die, and that is his price, as much as if he were knocked off for it by a Southern auctioneer.

We hear a good deal said about moonshine by so-called practical people, and the next day, perchance, we hear of their failure, they having been dealing in fancy stocks; but there really never is any moonshine of this kind in the practice of poets and philosophers; there never are any hard times or failures with them, for they deal with permanent values.