

VIII

JULY, 1860

(ÆT. 42-43)

July 1. 2 P. M. — To Well Meadow.

River three and seven eighths above summer level.

Rattlesnake grass is just beginning. The slender and leafy panic of the meadows (tall for size), say a week. Saw a large black and blue (edged) butterfly yesterday. Fowl-meadow grass.

Notice those slate-colored spots on a rough goldenrod leaf, answering to the crimson on red maples, surrounded by a light ring and centred with greenish.

The hellebore fall is now conspicuous and fairly under weigh. The cabbage but just begun to fall. I see one leaf of the last fully eighteen inches by thirteen.

Brachyelytrum grass, apparently just begun, or a day.

While reclining on the sedge at end of town-bound path, by the *scoparia*, I see a warbler deliberately investigating the smooth sumachs and their old berry-bunches, in various positions. It is a slaty blue above, with a bright-yellow front-head and much yellow on the wings (at angle, etc.), a very distinct black throat, triangularwise, with a broad black line through the eyes or side-head, a forked tail which is dark beneath; belly and vent white or whitish. It is undoubtedly the *Sylvia chrysoptera*, or golden-winged warbler, which I think must be breeding here.

I see young partridges not bigger than robins fly three or four rods, not squatting fast, now.

Returning over the causeway, the light of the sun was reflected from the awns of a grain-field (probably wheat)¹ by Abiel Wheeler's house so brightly and in such a solid mass as to far surpass in amount of light the densest whiteweed thereabouts, and at first impre s you as if it were whiter than whiteweed, but in fact it was *not* white, but a very bright sunny gleam from the waving phalanx of awns, more calculated to reflect the light than any object in the landscape.

July 2. A. M. — To lilies above Nut Meadow.

The phalaris heads are now closed up, and it looks like another kind of grass, — those heads which stood so whitish some eighteen inches above their broad green leaves. The bayonet rush is not quite out.

The lilies are not yet in prime. A large one measures six and a half inches over by two and a half high.

Nowadays hear from my window the constant tittering of young golden robins, and by the river fields the alarm note of the peetweets, concerned about their young.

Does not the summer régime of the river begin say about July 1st, when the black willow is handsome and the beds of front-rank polygonum are formed above water?

Yesterday I detected the smallest grass that I know, apparently *Festuca tenella* (?), apparently out of bloom, in the dry path southwest of the yew, — only two to four inches high, like a moss.

¹ Yes.

July 3. 2 P. M. — To Holbrook's meadow and Turnpike to try springs.

Looked for the marsh hawk's nest (of June 16th, *q. v.*) in the Great Meadows. It was in the very midst of the sweet-gale (which is three feet high), occupying an opening only a foot or two across. We had much difficulty in finding it again, but at last nearly stumbled on to a young hawk. There was one as big as my fist, resting on the bare, flat nest in the sun, with a great head, staring eyes, and open gaping or panting mouth, yet mere down, grayish-white down, as yet; but I detected another which had crawled a foot one side amid the bushes for shade or safety, more than half as large again, with small feathers and a yet more angry, hawk-like look. How naturally anger sits on the young hawk's head! It was 3.30 P. M., and the old birds were gone and saw us not. Meanwhile their callow young lie panting under the sweet-gale and rose bushes in the swamp, waiting for their parents to fetch them food.

June is an up-country month, when our air and landscape is most like that of a more mountainous region, full of freshness, with the scent of ferns by the wayside.

The *scheuchzeria* is full of green fruit fully grown at Gowing's. It forms the upright grass-like plant next the more open pool, rising amid the floating sphagnum, with the spatulate sundew interspersed with it, and a very little of the leaden-sheathed *criophorum* and a sprig or two of *cassandra*. The *Glyceria aquatica* has been out some time and is now apparently done at

Holbrook's meadow. The *Agrostis scabra*, the fine, long, slender branched fly-away grass, almost out, in what was Moore's Swamp by Bedford road. Also, in the ditch on the south side the road there, partly procumbent at base, a rather delicate and pale rough-flowered grass with (in this case) the paleæ so projecting at tip as to give it a dentate appearance. I called it last year the *Poa dentata* of Torrey. Now in its prime here, and larger specimens in the ditch by the Corner road, south side, southwest of stump fence, say ten days. The paleæ have a white or scarious tip and just below it a dark transverse line.

July 4. Gentle rain in the night (last).

The white pine shoot which on the 19th of June had grown sixteen and a quarter inches and on the 27th twenty and three quarters is now twenty-three and an eighth inches long.

2 P. M. — Look at springs toward Dugan's and White Pond.

Standing on J. P. Brown's land, south side, I observed his rich and luxuriant uncut grass-lands northward, now waving under the easterly wind. It is a beautiful Camilla, sweeping like waves of light and shade over the whole breadth of his land, like a low steam curling over it, imparting wonderful life to the landscape, like the light and shade of a changeable garment, waves of light and shade pursuing each other over the whole breadth of the landscape like waves hastening to break on a shore. It is an interesting feature, very easily overlooked, and suggests that we

are wading and navigating at present in a sort of sea of grass, which yields and undulates under the wind like water; and so, perchance, the forest is seen to do from a favorable position.

None of his fields is cut yet.

Early, there was that flashing light of waving pine in the horizon; now, the Camilla on grass and grain.

Juncus bufonius, probably several days in some places.

The sedgy hollows, table-lands, and frosty places in the woods now most beautiful, the sedge most fresh and yellowish-green, a soft, dry bed to recline on. For example, that place south of Ledum Swamp, the sedge, especially in the old path, falling every way like cow-licks on an unkempt head. When we enter it from the west, with the sun shining between thundery clouds, it is all lit with a blaze of yellow light, like a pasture on Mt. Washington, nearer the sun than usual.

How beautiful the dark-green oak leaves now! How dark the chincapin oak leaves! Now the pines are almost indistinguishable by color amid the deciduous trees.

The large johnswort now begins to be noticed generally, — a July yellow.

Scared up a young bobolink, which flies a couple of rods only.

A few toads still ring at evening, and I still notice, on the rocks at White Pond, the pine pollen yellowing them, though it fell some time ago.

7 P. M., river is one and three eighths above summer level.

July 5. Rain last night and all to-day.

I notice of late the *Osmunda regalis* fully grown, fresh and handsome.

July 6. Rained last night, as well as all yesterday and some of the night before. Three quarters of an inch has fallen.

6 A. M., river two and seven sixteenths above summer level. 7 P. M., three and five eighths above summer level. Thus three quarters of an inch has raised it only two and a quarter inches.

July 7. 7 A. M. River two and a half above summer level.

East wind and hazy.

I see a flock of some twenty-five crows. Probably the young are just grown.

Agrostis scabra. *Cyperus filiculmis*, a day. *Rhynchospora fusca*, apparently beginning (see stigmas). *Glyceria elongata* at little snapping turtle or Hemlock ditch, apparently done, say ten days; panicle not narrow now, more than *G. fluitans*.

Have begun to gather currants three or four days. Notice few ripe blueberries.

June 30th, July 3d, 4th, 6th, and 7th, I carried round a thermometer in the afternoon and ascertained the temperature of the springs, brooks, etc.

The springs, in the order of coldness, stand thus: —

1 Boiling Spring	45°	June 30
2 Dennis's railroad	46½°	July 7
3 & 4 Henry Shattuck's two	48°	July 6

5 Violet Sorrel (N. Barrett's)	48°	July 6
6 E. Hosmer's dam	48°	July 3
7 J. Farmer's	48°	July 6
8 Beyond Peter's	48° to 49°	July 3
9 Brister's	49°	June 30
10 Corner Spring (W. Wheeler's)	49°	July 4
11 Minot Pratt's	49°	July 6
12 Dugan's	50°	July 4
13 Cheney's	50°	July 3, 6 P. M., (air 72°) (July 4, 2 P. M., air 83 and spring 50 + still)
14 Garfield's (Moore's Swamp)	52°	July 3
15 John Hosmer's	54°	July 4
16 Assabet	54°	July 7
17 Oak Meadow	54°	July 6
18 Wheeler's	56°+	July 7

Omitting the last, as too much enlarged artificially and so warmed, the average temperature of seventeen is $49\frac{1}{2}^{\circ}$. Omitting also the 1st, 2d, 14th, 15th, 16th, and 17th, *i. e.* the extremes, the average of the remaining eleven is 48.7° , and they do not differ more than 2° from one another. On the whole, then, where I had expected to find great diversity I find remarkable uniformity. The temperature of good or cool springs in this town at this season varies very little indeed from 49° , and I should be surprised to meet with one considered cold which varied more than 3° from this.

The temperature of our well was 49° , June 30th; E. Hosmer's northernmost 49° , July 6; southernmost $49\frac{1}{2}^{\circ}$, July 6. 49° would seem to be the temperature at present very generally of water at a certain depth in the ground. This is very near the mean annual temperature of the air here.

The temperature of the air in the meanwhile was as follows, on the north side of our house: —

June 30	July 3	July 4	July 6	July 7
2.15 P. M., 83°	2 P. M., 82°	2 P. M., 83°	6 A. M., 57° to 60°	7 A. M., 56°
	6 P. M., 72°		2 P. M., 75°	2.30 P. M., 76° 7 P. M., 75°

The average temperature of the air at 2 P. M. for the five days of my observations was 80° , and the greatest variation during the observations was some 10° in the course of the afternoon. But I presume that this made no odds with the temperature of the springs, for Cheney's Spring stood $50^{\circ} +$ both at 6 P. M., the 3d, when the thermometer was at 72° , and at 2 P. M., the 4th, when it had risen 11° higher. I should say, then, that a spring colder than 48° was remarkably cold; 48° to 50° , inclusive, quite cold, a very good cold spring; above 50° and not above 54° , cold; above that and not above 58° , *tolerable* merely. Or, I should rather say that only 50° and below was *cold* for a *spring*; say below 48° , remarkably cold; between that and 50° , inclusive, cold; 50° to 54° , inclusive, *pretty* cold; thence to 58° , inclusive, merely tolerable to drink.

Of the above springs, all but Nos. 1, 4, 7, 11 (?), and 17 are distinctly just at the base of a hill or bank and on the edge of a meadow or river. Apparently the water which percolates through the hill or upland, having reached a stratum saturated with water and impervious to it, bursts out in a spring. No. 1 (the coldest) only bursts out higher up a hillside, and 4, 7, and 17, a little

within meadows. No. 11 should perhaps be included among the mass.

Of course an indefinite number of such springs may be found and cleared out along the bases of the hills, as wells dug anywhere are pretty sure to come to water of a similar character. The above are such as have been discovered and used, — been kept open, — or which have kept themselves clear. Frequently, in ditching his meadow, the farmer strikes on a powerful spring, and if it is cold enough and convenient to his house or work, he stones it up or sinks a tub or barrel there.

Of the above, Nos. 3, 6, 8, 13, 15 are, or have been, barrelled or tubbed; Nos. 5 and 13 stoned about (the last with steps down to it); Nos. 1 and 18 much deepened and enlarged and more or less covered. The remaining ten are in a natural state, only kept open more or less by use. 8, 9, and 14 have, or have had, a box for minnows in or near them. Perhaps the most natural well of them all is No. 11, Minot Pratt's, filling an oblong angular cavity between upright rocks.

Where the bottom is gravelly, and they are made deep by being barrelled or stoned up, they are a peculiarly clear and crystalline-looking water, Walden-Pond-like, quite unlike the river and brooks, — a peculiar clearness with whitish sands at the bottom, — perhaps because too cold for vegetation to defile them.

Each farmer values his spring and takes pride in it. He is inclined to think it the coldest in the neighborhood.

Each one is the source of a streamlet which finds its

way into the river, though possibly one or two of them may dry up some seasons. Only one to my knowledge visibly bubbles up, — or did before interfered with, — *viz.* the Boiling Spring, which is the coldest. This would indicate that its reservoir is still higher considerably and deep within the hill. You commonly see the water coming in more or less copiously through the gravel on the upper side, sometimes from under a rock in a considerable stream and with a tinkling sound.

The coldest, as I notice, have the clearest and most crystalline or Walden-Pond-like look.

Henry Shattuck's two were of the same temperature, though one was in the open meadow at the head of a ditch, and the other in the bank and covered or boxed over. This shows that they come at once from a considerable depth in the earth and have no time to be warmed before they flow off. A rail standing on its end in one of his ditches was almost concealed, so deep is the mud in his meadow. He pointed out two or three in his ditches "as big as your body" and of unknown depth.

No. 1 is at the head of them all, and no doubt was used by the Indians. It is used by the Fitchburg Railroad for their locomotives. No. 2 was made in cutting for the railroad, and is used by the track-repairers. Some are far away and only used by hunters and walkers and berry-pickers. Some are used in haying-time only. Some are so cold and clear, and so near withal, as to be used daily by some family, who "turn up their noses" at the well. Others, as Dugan's, are instead of the well. One, as Wheeler's, has had five

hundred dollars expended on it. No. 6 was found by Hosmer when he built his dam, and he imagines that it has medicinal properties, and used accordingly to come to drink at it often, though half a mile from his house. Some will have a broken tumbler hid in the grass near, or a rusty dipper hung on a twig near by. Others, again, drink through some hollow weed's stem. None are too cold for the *Rana fontinalis*, which will hardly make room for your face when you stoop to drink. Some are only known to myself and friends, and I clear them out annually.

I suspect that most of them never freeze entirely over.

The brooks stood thus, the temperature of the [atmosphere] at 2 P. M. being (as before) about 80°:—

July 7 Hemlock Brook (Grackle Swamp), where I saw the little snapping turtle	61	1
3 Saw Mill Brook, at Turnpike	62	2
4 Nut Meadow, at Brown's fence	64	3
4 " " (road by Dugan's)	65	4
3 Brook between Emerson and Connor	65	5
9 Swamp Bridge (back road) (air 80½ at 2 P. M.)	70	6
9 Miles Swamp Brook (Conantum)	70½	7
6 Dakin's, in road beyond Winn's	73	8
6 Below Francis Jarvis's, in road	74	9
3 Mill Brook (Turnpike Bridge)	75	10
3 Mill Brook (East Quarter schoolhouse)	78	11
	11)757½	
	68	11
	say 69	

The first five may be considered cold brooks. The 1st, 2d, and 5th come directly out of cold, peaty, or else

shady, swamps. This suggests that the soil of such swamps, though cleared and cultivated, must be many degrees cooler than that of dry, open uplands, and demand different crops and treatment.

The river stood thus at my boat's place:—

June 30, 2 P. M., air 83°, one rod from shore,	77°
July 1, 2 P. M., air 77°, " " " "	75°
July 3, 2 P. M., air 82°,	
6 P. M., air 72°, " " " "	75°
July 4, 2 P. M., air 83°, " " " "	78° (at Clamshell)
	in middle, 76° (" ")
	four feet from shore, 79° (" ")
July 6, ¹ 6 A. M., air 57° to 60°, one rod from shore,	67°
	in middle, 69°
2 P. M., air 75°, one rod from shore,	76°
7 P. M., air 75°, one rod off,	73°
July 7, 7 A. M., air 56°, one rod off,	69°
	in middle, 70½°
2.30 P. M., air 76°, in middle,	75°
	one rod off, 74° to 75°

Average temperature of river at one rod from shore at 2 P. M., 76°, or 7° more than that of the brooks tried. As the brooks are larger they approach nearer to the river in temperature.

It will be seen by the observations of the 4th, 6th, and 7th that there is from one and a half to two degrees difference between the temperature of the river at one rod from shore and in the middle, and that in the morning the middle is the warmest, at 2 P. M. the coldest. If the weather is colder than usual, the difference between the side and middle is less. Hence,

¹ After ¾ inch rain on the 5th.

evidently, fishes will change their ground every day and night, as they prefer warmer or cooler water.¹

The temperature of the Assabet at the stone-heaps, in the middle (both at top and bottom, it being only some three feet deep), on the 7th of July, at 4.30 P. M., was 75°, or the same as the main stream at 2.30 P. M.

The following water also was tested :² —

June 30,	Walden Pond, at bottom in four feet water,	71°
July 4,	White Pond, top, five feet from shore,	76°
July 3,	Gowing's Swamp (edge of middle pool),	78°
	“ “ in the sphagnum generally,	77°
July 3,	Merriam's cow-watering place, beyond Gowing's Swamp,	83°
July 3,	Spring in Holbrook's ditch,	58°

Places where cows drink were apparently at this date from 75° up to 83°.

In the afternoon of July 3d, when the air at our house at 2 o'clock was 82°, a breezy afternoon, [on] the little arrowhead desert on Sted Buttrick's land on the Great Fields, the thermometer, being buried an inch and three quarters deep, rose to 90°; at three inches deep, to 86°; lying flat on the surface, back up, to 86°; held in air above to 84°. That is, at this time of day, say mid-afternoon, it is warmer at two to three inches beneath the surface in such sand (where turtles bury their eggs) than in the air above. Indeed, I should think that in the hottest weather the eggs would be half cooked here.

At two to three inches deep in a half-deserted large

¹ Vide June 22d and 30th, 1855; also July 2d and 3d, 1855.

² Vide Aug. 23d and 24th and Aug. 10th; and Aug. 22d for Bittern Cliff.

ant-hill on Holbrook's path, it rose to 102°, — this was loose and gravelly, — or some 18° higher than in the air. This shows how much heat a sandy and porous soil may detain.

N. B. — My experiments were vitiated by my having to cover the thermometer with the sand which was taken up both from the surface and from below, and not waiting for the whole to acquire the same temperature with the surrounding soil of the same depth.

It appears that in a cold day at present the water of the river at 6 A. M. will be ten to fourteen degrees warmer than the air, and accordingly feels warm to the touch. In the translation into English of Cranz's "Greenland" from High Dutch (1767) I find "an elve or mountain spring," and again "Salmon elves, or the little streams from the hills."

July 8. Yesterday was quite hazy, with an east wind. This morning there is a cold mist, which soon becomes rain, — at 2.30 P. M. The thermometer is at 66°, and some sit by fires.

July 9. Clears up at noon.

See two handsome rose-breasted grosbeaks on the Corner causeway. One utters a peculiar squeaking or snapping note, and, both by form of bill and this note, and color, reminds me of some of those foreign birds with great bills in cages.

There is a smart shower at 5 P. M., and in the midst of it a hummingbird is busy about the flowers in the garden, unmindful of it, though you would think that

each big drop that struck him would be a serious accident.

July 10. 2 P. M. — To Pleasant Meadow via Lincoln Bridge.

The *Festuca ovina* is a peculiar light-colored, whitish grass, as contrasted with the denser dark-green sod of pastures; as on the swells by the tin-hole near Brister's.

Entering J. Baker's great mud-hole, this cloudy, cool afternoon, I was exhilarated by the mass of cheerful bright-yellowish light reflected from the sedge (*Carex Pennsylvanica*) growing densely on the hillsides laid bare within a year or two there. It is of a distinct cheerful yellow color even this overcast day, even as if they were reflecting a bright sunlight, though no sun is visible. It is surprising how much this will light up a hillside or upland hollow or plateau, and when, in a clear day, you look toward the sun over it late in the afternoon, the scene is incredibly bright and elysian. These various lights and shadows of the grass make the charm of a walk at present.

I find in this mud-hole a new grass, *Eatonia Pennsylvanica*, two and a half feet high.

Juncus, apparently *marginatus*, say ten days.

July 11. Heavy rain in the night [of the] 10th–11th. An unusual quantity of rain within a week past; too much now for our garden. The lower leaves of vines yellowed.

To-day and yesterday are cool and comfortable days, with a breeze. Thermometer at 2 P. M., 70 to 77.

2 P. M. — To Pine Hill.

Herd's-grass and red-top in prime. I often notice them growing in parallel rows of reddish and green, the seed apparently having fallen so.

Haying is now generally under way.

As I go along the railroad causeways, I am interested now, and of late, by those patches a rod or two over — amid the red-top, herd's-grass, etc., of A. Wheeler's meadow — of *Agrostis scabra*, that exceedingly fine slender-branched grass drooping and waving in the wind. It gives a pale pinkish(?)—purple sheen to those parts, completely monopolizing (apparently) the ground there. It makes the most purple impression of any grass. Call it early purple grass, as compared with the *Eragrostis pectinacea*. Probably it is not quite in prime. It is the most finely branched and slender-culmed for its size, and near at hand the most invisible of any grass at present, and less noticeable close at hand than in a favorable light at a distance. You will see, thus, scattered over a meadow, little flecks and patches of it, almost like a flat purplish cobweb of the morning, and it seems to recline on the other grasses. It is the finest hair that waves in the fields now; Proserpine's hair.

Find a yellow butterfly about dead, probably in consequence of the heavy rain of last night.

In the pool in Laurel Glen, *Glyceria acutiflora* almost.¹

I look at a young fox at Derby's. You would say from his step and motions that his legs were as elastic

¹ Out long since and now going to seed generally and very abundant, in wettest part of Great Meadows, about Holt.

as india-rubber, — all springs, ready at any instant to bound high into the air. Gravity seems not enough to keep him in contact with the earth. There seems to be a peculiar principle of resiliency constantly operating in him.

River at 7 P. M. eight and a half inches above summer level.

July 12. Hear a nuthatch in the street. So they breed here.

The best way to drink, especially at a shallow spring, or one so sunken below the surface as to be difficult to reach, is through a tube. You can commonly find growing near a spring a hollow reed or weed of some kind suitable for this purpose, such as rue or touch-me-not or water saxifrage, or you can carry one in your pocket.

Juncus militaris.

The river at 8 P. M. is eight and three quarters inches above summer level.

Just after the sun is set I observe the dewdrops on the pontederia leaves. (Do not know how early they begin to form.) Even when the leaf stands perpendicular, the drop is collected at the uppermost point, and then, on a slight jar or agitation of the water, runs down the leaf. This is the only broad and thick leaf that rises above the water, and therefore it appears to be the only one that collects the dew thus early.

A Mr. Bradshaw, taxidermist, carpenter, etc., etc., of Wayland, tells me that he finds the long-eared owl there in summer, and has set it up.

July 13. 2 P. M. — To Little Truro.

You now especially notice some very red fields where the red-top grass grows luxuriantly and is now in full bloom, — a red purple, passing into brown, looking at a distance like a red-sandstone soil. The different cultivated fields are thus like so many different-colored checkers on a checker-board. First we had the June-grass reddish-brown, and the sorrel red, of June; now the red-top red of July. For a week — and if you look very closely, for a fortnight or more — past, the season has had a more advanced look, from the reddening, imbrowning, or yellowing, and ripening of many grasses, as the sweet-scented vernal (for some time generally withered) and the June-grass, and some grain, — rye, wheat, etc., — so that the fields and hillsides present a less liquid green than they did. The vernal freshness of June is passed. Our mowing-fields new laid down with herds'-grass, red-top, and clover — *i. e.* the second year — are red or reddish squares divided regularly with greener herd's-top [*sic*] in parallel lines, probably the seed, of different weight, having fallen thus,  the red spaces often eight or ten feet wide. The various colors or tints of grasses, in some large pasture for instance, especially in cloudy weather, supply the place of light and shade. The pasture is distinctly paraded with them half a mile off, — the very light, whitish *Festuca ovina*, the dark-green *Poa compressa*, and rounded yellow patches of sedge (*Carex scoparia*, etc.).

Observed last night young swallows roosting on the

willows over the river, and for some days have seen them on the telegraph-wires.

Observed a huckleberry bush springing from the top of a large and high white pine stump that had been sawed off. It stood in the chink between the bark and the wood, and had evidently come from a seed dropped by a bird, which had blown into this crack.

A heavy shower (with thunder) just before noon this morning, and more in the west of us in the afternoon.

July 14. 2 P. M. — To Botrychium Swamp.

Botrychium Virginianum apparently in prime. *Alopecurus aristulatus* past prime. Pratt's Pond side. Perceive now the light-colored tops of chestnuts in bloom, and, when I come near them, an offensive, sickening odor, somewhat like that of the barberry blossoms, but worse.

Returning, I notice on a large pool of water in A. Heywood's cow-yard a thick greenish-yellow scum mantling it, an exceedingly rich and remarkable color, as if it were covered with a coating of sulphur. This sort of scum seems to be peculiar to cow-yards, and contrasts with that red one by the Moore's Swamp road last summer. Out of foulness Nature thus extracts beauty. These phenomena are observed only in summer or warm weather, methinks.

7 P. M. — On river.

Water ten and five eighths above summer level; probably about done rising.

The spartina grass.

I look for dewdrops on the pontederia, but see none at first; but finally, looking in a still and shady place behind some willows, I see many drops fully formed sparkling in the light, at just eight minutes after seven by my watch (the sun sets at thirty-five minutes after seven; say, then, half an hour before sunset). But, it being windy, I did not notice any *generally*, even long after sunset.

Also looked to see if the lilies withdraw under water at night, as stated in Mrs. Lincoln's Botany. The buds which opened and closed to-day, and other buds, now rest half an inch or more deep in the water, which they would naturally do by their form and weight. When they open in the morning they will probably rest more buoyantly on the surface, but I have never discovered that they withdrew under water.

The fowl-meadow grass is now in prime and covering the islands very densely. It has a purplish tinge and a very green culm contrasting with its panicle.

The surface of the earth in summer is painted of various shades of green in mowing and pasture and meadow and some waste land by the grasses. The *Agrostis vulgaris* of pastures and hilltops is a dark green, the *Festuca ovina* a very light (even whitish) green. How rich some fields of red-top at present! Perfect squares, it may be, like rich carpets spread out, and contrasting with very different tints of green next to them.

The true grasses (excepting the grains) which thus at a distance paint the landscape *generally* at this season or earlier are (1) herd's-grass, (2) red-top, (3) *Agrostis scabra*, (4) blue-joint (?), (5) June-grass, (6) *Poa com-*

pressa, (7) fowl-meadow, (8) sheep's fescue, (9) piper grass (?), (10) vernal grass, (11) canary grass, especially Nos. 5, 2, 8, 6, 1; but of these only one (8), probably, is indigenous, and Nos. 5, 6, 10, 11 are now generally done.

The *Cyperaceæ* which now or earlier color the landscape generally by their mass are (1) *Carex Pennsylvanica*, (2) *C. scoparia*, (3) *monile*, (4) *stellulata*, (5) *lanuginosa*, (6) *bullata*, (7) *siccata*, (8) *crinita*, (9) *lupulina*, (10) *Scirpus eriophorum*, (11) *Eleocharis acicularis*, (12) *Scirpus lacustris*, (13) *eriophorum*s, etc. Nos. 1 and 7 give a yellow hue to upland open wilds or woodlands and dry hollows, where the forest has recently stood, — *not pastured*. 3, 4, 5, 6, 9, 10 make the mass of the sedge on the river meadows, of a general yellow hue; 2 and 8 flourish more about their edges; 11 greens the muddy banks at low water; and 12 stands in dark-green patches here and there along the muddy shores of the river.

July 15. It seemed to me yesterday that the foliage had attained its maximum of darkness, and as I ascended the hill at eve the hickories looked even autumnal. Especially I was struck by the dark but still perfect green leaf of the swamp white oak.

I hear this forenoon the *link link* of the first bobolink going over our garden, — though I hear several full strains of bobolinks to-day, as in May, carrying me back to Apple Sunday, but they have been rare a long time. Now as it were the very cope of the dark-glazed heavens yields a slightly metallic sound when struck.

I hear on all sides these days the loud tinkling rattle of the mowing-machine, but, alas, the mower goes to the blacksmith's to whet his scythe only every second or third day!

P. M. — To Hill and Assabet Bath.

On Hill. — No crops clothe the earth with richer hues and make a greater impression of luxuriousness than the cultivated grasses. Field after field, densely packed like the squares of a checker-board, all through and about the villages, paint the earth with various shades of green and other colors. There is the rich glaucous green of young grain now, of various shades, depending on its age and kind; the flashing blades of corn which does not yet hide the bare ground; the yellowing tops of ripening grain; the dense uniform red of red-top, the most striking and high-colored of all (that is, cultivated); the very similar purple of the fowl-meadow (the most deep-piled and cumulous-looking, like down) along the low river-banks; the very dark and dusky, as if it were shadowy, green of herd's-grass at a distance, as if clouds were always passing over it, — close at hand it is of a dark purplish or slaty purple, from the color of its anthers; the fresh light green where June-grass has been cut, and the fresh dark green where clover has been cut; and the hard, dark green of pastures (red-top) generally, — not to speak of the very light-colored wiry fescue there.

The solid square fields of red-top look singularly like bare ground at a distance, but when you know it to be red-top you see it to be too high-colored for that. Yet it thus suggests a harmony between itself and the

ground. Look down on a field of red-top now in full bloom, a quarter of a mile west of this hill, — a very dense and red field, — at 2.30 P. M. of this very warm and slightly hazy but not dogdayish day, in a blazing sun. I am surprised to see a very distinct white vapor, like a low cloud in a mountainous country, or a smoke, drifting along close over the red-top. Is it not owing to the contrast between this hot noontide air and the moist coolness of that dense grass-field?

Then there is the cheerful yellowish green of the meadows, where the sedges prevail, *i. e.* yellowest where wettest, with darker patches and veins of grass, etc., in the higher and drier parts. I can just distinguish with my naked eye — knowing where to look — the darker green of pipes on the peat meadows two miles from the hill.

The potato-fields are a very dark green.

July 16. 2 P. M. — To Great Meadows by boat.

You notice now along the river, on the muddy shores, the dry (and closed) whitish heads of the canary grass, standing high above its yet fresh green leaves. It forms only narrow, dense patches a few rods in length. The banks of the Great Meadows are red-top, and (is it not?) *Agrostis scabra* (the fine long-branched, yet branching again often below the middle) and fowl-meadow on the lower parts of the bank commonly. The *Glyceria acutiflora* is abundant and now going to seed in the wettest part of the Holt portion of the meadow. That which I have called the *Poa dentata* of Torrey is a very common grass in ditches and other wet places, especially

with the last-named at the Holt, and is now mostly done. I should think it might be an undescribed species of *Glyceria*.

Setaria viridis, Channing's garden, probably two or three days.

I notice the fruit of the bur-reed (opposite Prichard Shore), now large, pickle-green, and about as big as that of the upper Sudbury meadows; so I think it is the same, though not so rank.

In the bays by the riverside where the pads have been least eaten, I see at least three times as many of the three kinds mixed as can lie on that surface, one overlapping and crowding another and the more exposed curled up on their edges; but they are so much riddled already and eaten by insects that this abundant supply is needed. It is an abundant vegetable food apparently for many kinds. I see a large tuft of pontederia whose leaves have been slit longitudinally into a dozen parallel slits, — not always clear out, — and so they hang in ribbons; and there is a downy feather of a bird attached to one. Could it have been done by some water-fowl?

Pipes have been out of bloom apparently a long time.

Standing amid the pipes of the Great Meadow, I hear a very sharp creaking *peep*, no doubt from a rail quite near me, calling to or directing her young, who are meanwhile uttering a very faint, somewhat similar peep, which you would not hear if not very much inclined to hear it, in the grass close around me. Sometimes the old bird utters two short, sharp creaks. I look sharp, but can see nothing of them. She sounds

now here, now there, within two or three rods of me, incessantly running in the grass. I had already heard, more distant, a more prolonged note from some waterfowl, perhaps a plover, if not possibly a male rail, hereabouts.

The *Ailantus glandulosus* (Warren's yard), in its height probably on Saturday, 14th, filled the streets with a disagreeable sickish odor much like that of the chestnut. I should put this, the chestnut, and the barberry together.

July 17. 2 P. M. — To Walden.

The soft sand on the bottom of Walden, as deep as I can wade, feels very warm to my feet, while the water feels cold. This may be partly a mere sensation, but I suspect that the sand is really much warmer than the water and that some creatures take refuge in it accordingly, that much heat passes through the water and is absorbed in the sand. Yet when I let a thermometer lie on the bottom and draw it up quickly I detect no difference between the temperature of the bottom and of the water at the surface. Probably it would have been different if the thermometer had been buried in the sand.

The air at 2 P. M. was 77; Walden near the shore is 76, in the middle, 74°; and when I let down a thermometer some sixty feet and draw it up quickly, I get no lower than 74°, but it may have risen as it came up.

The nighthawk's ripping sound, heard overhead these days, reminds us that the sky is, as it were, a roof, and that our world is limited on that side, it being reflected as from a roof back to earth. It does not suggest an

infinite depth in the sky, but a nearness to the earth, as of a low roof echoing back its sounds.

Eleocharis acicularis still blooms.

The sternothærus in Walden has a smooth, clean shell, rather prettily marked, it is so clean, and would by many be taken for a different species from that of the river, which is commonly colored with mud and moss. I take two into the boat, and they think it enough when they have merely hidden their *heads* in a corner.

Also the great bullfrogs which sit out on the stones every two or three rods all around the pond are singularly clean and handsome bullfrogs, with fine yellow throats sharply separated from their pickle-green heads by their firmly shut mouths, and with beautiful eyes. They sit thus imperturbable, often under a pile of brush, at nearly regular intervals. An English taxidermist of Wayland (a cockney) told me the other day that he would have set up a bullfrog, it has so beautiful a "hie," but he could not buy a bullfrog's "hie" in the market.

July 18. 2 P. M. — To Second Division.

The *Asclepias Cornuti* is abundantly visited nowadays by a large orange-brown butterfly with dark spots and with silver spots beneath. Wherever the *asclepias* grows you see them.

The Second Division *juncus* is already withering and is considerably browned, so early is it. It appears not to ripen any seed.

July 19. A very dark cloud came up from the west this forenoon, — a dark curtain rolled up, with a

grayish light beneath it, — which so darkened the streets and houses that seamstresses complained that they could not see to thread a needle, and for a few minutes rain fell in a deluge, the gutters ran full, and there was a whirlpool at every grating. This month has been remarkably wet, and the haymakers are having very catching weather.

2 P. M. — Up river in boat.

The pontederia is now generally conspicuous and handsome, — a very fresh blue, — with no stale flowers.

You now see great beds of polygonums above the surface getting ready to bloom, and the dulichium stands thick in shallow water, while in the cultivated ground the pigweed, butterweed, and Roman wormwood, and amaranth are now rank and conspicuous weeds. One troublesome rank weed in the garden now is the *Panicum Crus-galli*, — its great rather flat spreading branches. I see one just out.

I hear now that very fine pittering sound of a locust or cricket in the grass.

The *Juncus militaris* is commonly, but freshly, out.

We come to a standstill and study the pads in the J. Hosmer bulrush bog. There are on the pads, eating them, not only many black slugs or grubs, but a great many small dark-brown beetles, a quarter of an inch long, with a pale-brown edge, copulating; also other beetles, skaters, and flies (small brownish, large-winged flies in numbers together), and a variety of eggs are fastened to the pads, many in little round pinkish patches. I see one purplish patch exactly in the form of the point of a leaf, with a midrib, veins, and a bristle-

like point, calculated to deceive; this lying on the pad. Some small *erect* pontederia leaves are white with eggs on the under side as if painted.

There are small open spaces amid the pads, — little deeps bottomed and surrounded with brown and ruddy hornwort like coral, — whose every recess is revealed in the sunlight. Here hundreds of minnows of various sizes and species are poised, comparatively safe from their foes, and commonly a red spider is seen making its way from side to side of the deep.

The rich crimson under sides (with their regularly branching veins) of some white lily pads surpasses the color of most flowers. No wonder the spiders are red that swim beneath; and think of the fishes that swim beneath this crimson canopy, — beneath a crimson sky. I can frequently trace the passage of a boat, a pickerel-fisher, perhaps, by the crimson under sides of the pads upturned.

The pads crowd and overlap each other in most amicable fashion. Sometimes one lobe of a yellow lily pad is above its neighbor, while the other is beneath, and frequently I see where a little heart-leaf (now showing its green spidery rays) has emerged by the stem, in the sinus of a great nuphar leaf, and is outspread in the very midst of it. The pads are rapidly consumed, but fresh ones are all the while pushing up and unrolling. They push up and spread out in the least crevice that offers.

Upland haying is past prime, and they are working into the low ground. None mowing on the Great Meadows yet.

I noticed on the 16th that the darkness of the pipes was not obvious, the sedge is now comparatively so dark.

Minott, who sits alone confined to his room with dropsy, observed the other day that it was a cold summer. He knew it was cold; the whip-poor-will told him so. It sung once and then stopped.

July 20. 2 P. M. — To Walden.

Warm weather, — 86 at 2 P. M. (not so warm for a good while).

Emerson's lot that was burnt, between the railroad and the pond, has been cut off within the last three months, and I notice that the oak sprouts have commonly met with a check after growing one or two feet, and small reddish leaflets have again put forth at the extremity within a week or so, as in the spring. Some of the oak sprouts are five to six feet high already.

On his hill near by, where the wood was cut about two years ago, this second growth of the oaks, especially white oaks, is much more obvious, and commenced longer ago. The shoots of this year are generally about two feet long, but the first foot consists of large dark-green leaves which expanded early, before the shoot met with a check. This is surmounted by another foot of smaller yellowish-green leaves. This is very generally the case, and produces a marked contrast. Dark-green bushes surmounted by a light or yellowish-green growth.

Sometimes, in the first-mentioned sprout-land, you see where the first shoot withered, as if frost-bitten at

the end, and often only some large buds have formed there as yet. Many of these sprouts, the rankest of them, are fated to fall, being but slightly joined to the stump, riddled by ants there; and others are already prostrated.

Bathing on the side of the deep cove, I noticed just below the high-water line (of rubbish) quite a number of little pines which have just sprung up amid the stones and sand and wreck, some with the seed atop. This, then, is the state of their coming up naturally. They have evidently been either washed up, or have blown across the ice or snow to this shore. If pitch pine, they were probably blown across the pond, for I have often seen them on their way across.

Both *Scirpus subterminalis* and *debilis* are now in bloom at the Pout's Nest, the former the longest time, the water being very low and separated from the pond. The former out for some time, the latter not long.

Great numbers of pollywogs have apparently just changed into frogs. At the pondlet on Hubbard's land, now separated from the main pond by a stony bar, hundreds of small frogs are out on the shore, enjoying their new state of existence, masses of them, which, with constant plashing, go hopping into the water a rod or more before me, where they are very swift to conceal themselves in the mud at the bottom. Their bodies may be one and a half inches long or more. I have rarely seen so many frogs together. Yet I hardly see one pollywog left in this pool.

Yet at the shore against Pout's Nest I see many pollywogs, and some, with hind legs well grown beside

their tails, lie up close to the shore on the sand with their heads out like frogs, apparently already breathing air before losing their tails. They squat and cover there as I come by, just like frogs.

July 21. A rainy day; half an inch of rain falls, spoiling much hay. This is so wet a season that the grass is still growing fast and most things are very fresh.

The leaves generally do not get to be perfect till the middle of July, when they are of a dark, hard, glossy green, *e. g.* the swamp white oak.

6 P. M. — Up Assabet.

Now, after the rain, the sun coming forth brightly, the swallows in numbers are skimming low over the river just below the junction.

Considerable bur-reed, vallisneria, and heart-leaf has been washed up against the weeds and pads along the sides of the river of late.

The canary grass standing so high and densely, with its now very light-brown closed heads, looks more like grain at a distance than any of our wild grasses, as you look down the river from the junction.

July 22. 2 P. M. — 70°, and, with a breeze, cool. To Annursnack.

See in the ditch by the roadside on Colburn Hill a box turtle which was crushed some time ago, and there is the mark of the wheel that passed over him. It is remarkable that, though I have seen but four or five of these turtles in this town, two at least of them had been crushed by a wheel, — that, few as they are, they

should have got in the way of a wheel. I found another on the railroad once, southeast of this, on a part of the same dry region, and one on the dry plain under Fair Haven Hill.

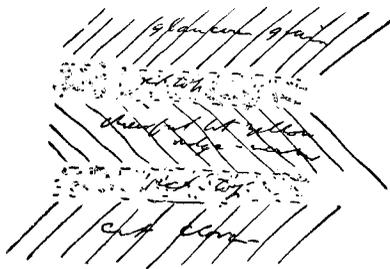
In the path through Hosmer's pines beyond the Assabet, see a wood turtle — whose shell has apparently had one or two mouthfuls taken out of it on the sides — eating in a leisurely manner a common pink-topped toadstool some two inches in diameter, which it had knocked down and half consumed. Its jaws were covered with it.

The butterflies at present are chiefly on the Canada thistle and the mayweed. I see on the last, in the road beyond Colburn Hill, a surprising number of the small reddish (small copper) butterflies, for a dozen rods.

The leek will apparently bloom very soon. I see the stigmas, I think. What a surprising and stately plant! Its great flower-stem stands now a little aslant, some fifteen or eighteen inches high, regular[ly] beset with its great thick leaves, gradually lessening upward to its massy head. It has a peculiarly columnar appearance, like the Leaning Tower of Pisa.

Yesterday having been a rainy day, the air is now remarkably clear and cool and you rarely see the horizon so distinct. The surface of the earth, especially looking westward, — grass grounds, pastures, and meadows, — is remarkably beautiful. I stand in Heywood's pasture west of the leek and, leaning over the wall, look westward. All things — grass, etc. — are peculiarly fresh this season on account of the copious rains.

The next field on the west slopes gently from both east and west to a meadow in the middle. So, as I look over the wall, it is first dark-green, where white clover has been cut (still showing a myriad low white heads which resound with the hum of bees); next, along the edge of the bottom or meadow, is a strip or belt three or four rods wide of red-top, uncut, perfectly distinct; then the cheerful bright-yellow sedge of the meadow, yellow almost as gamboge; then a corresponding belt of red-top on its upper edge, quite straight and rectilinear like the first; then a glaucous-green field of grain still quite low; and, in the further corner of the field, a much darker square of green than any yet, all brilliant in this wonderful light. You thus have a sort of terrestrial rainbow, thus: —



The farmer accustomed to look at his crops from a mercenary point of view is not aware how beautiful they are. This prospect was really exciting, even as a rainbow is. Then the next pasture on the northwest, where it sloped toward me gently, a smooth velvet or impalpable green slope, with here and there the lightest cobwebby touch of lighter green like a dew on it, where a little fescue grass still made an impression in spite of

the cows. These soft, indefinite lighter touches on the dark-green enamelled slope! It was like a delicately watered surface, and here and there stood on it a few young hickories, their stems and their umbrage both as black as a coal; and further, just this side the wall over which the clear light came, some low bushes, probably sumach, reflected a hoary, silvery light. You can tell the crops afar off by their color. The next, more springy pasture on the north was all lit up with yellow ferns.

Smooth sumach apparently in prime, and handsome as a spiræa. The flies that rain about your head in woods, how long? Hills (not so far off as to be blue) are now a yellowish brown from the withered heads of grass. Pastures generally a brownish tinge. First locust heard.

July 23. The button-bush is but just fairly beginning here and there.

Still more rain this forenoon, but chiefly clouds. We have had several thunder-showers this month in the forenoon, it clearing off bright by the afternoon.

I saw the other day where the lightning on the 12th or 13th had struck the telegraph-posts at Walden Pond. It had shattered five posts in succession, they being a dozen rods apart, spoiling them entirely; though all of them *stood* but one, yet they were a mere wrack of splinters through which you could look. It had omitted a great many more posts and struck half a dozen more at a great distance from these on each side. The furthest I noticed was near by the second mile-post, the nearest midway the causeway. And at the same time

there was a smart shock, an explosion, at the operating office at the depot, two miles off from the furthest point. I should think, speaking from memory, that the posts struck were the oldest and dampest, or most rotten. At one or two posts it had plainly entered the ground and plowed toward the railroad-track, slightly injuring it. It struck a pitch pine standing within four or five feet of the wire, leaving a white seam down one side of it, also two large oaks a little further off. This was where the telegraph ran parallel to, and a few feet only from, a wood. It also struck a small oak on the opposite side of the track. The lightning struck for two miles (!!) at least.

2 P. M. — By boat to Conantum.

It has cleared up fairly.

The late rose is now in prime along the river, a pale rose-color but very delicate, keeping up the memory of roses. Also the *Lilium Canadense* is apparently in prime and very abundant in College Meadow.

So far as leaves are concerned, one of the most noticeable phenomena of this green-leaf season is the conspicuous reflection of light in clear breezy days from the silvery under sides of some.

All trees and shrubs which have light-colored or silvery under sides to their leaves, but especially the swamp white oak and the red maple, are now very bright and conspicuous in the strong wind after the rain of the morning. Indeed, now that the leaves are so numerous they are more noticeable than ever, but you must be on the windward side. Some, as the *Salix alba*, are thus silvered only at the top and extremities, the

younger leaves alone being sufficiently appressed to show their under sides. But the two kinds first mentioned are the most generally conspicuous, and these forming commonly the front rank, — especially at the base of hills, — behind which grow other oaks, and birches, pines, etc., you see the whole outline of these trees, waving and rustling in the breeze against that darker green, suggesting frostwork, or as if etched in silver on a green ground. To be sure, most, if not all leaves, not to mention grasses, are a paler green beneath, and hence the oaks and other trees behind show various shades of green, which would be more observed if it were not for these stronger contrasts. Though the wind may not be very strong nor incessant, you appear to see *only* the under sides of those first named, and they make a uniform impression, as if their leaves, having been turned up, were permanently held so. Before the wind arose, the wooded shore and hillsides were an almost uniform green, but now the whole outline of the swamp white oaks and maples is revealed by the wind — a sort of magic, a “presto change” — distinctly against trees whose leaves are nearly of the same color with the upper sides of these.

Some of the swamp white oaks, whose leaves are but slightly turned up, look as if crisped by frost. The grape leaf also, where it occurs, is sufficiently conspicuous. Thus the leaves take an airing. It is like etching on silverware. If you look sharply, you perceive also the paler under sides of the oaks and birches in the background contrasting with the darker upper sides of their lower leaves. In a maple swamp every

maple-top stands now distinguished thus from the birches in their midst. Before they were confounded, but a wind comes and lifts their leaves, showing their lighter under sides, and suddenly, as by magic, the maple stands out from the birch. There is a great deal of life in this landscape. What an airing the leaves get! Perchance it is necessary that their under sides be thus exposed to the light and air in order that they may be hardened and darkened by it.

At the same time with this, and indeed for about a week, I have seen some maples of both kinds just beginning to show a ruddy tinge, and I think that this is really for the most part an evidence of feebleness, for I see that one or two white maples standing in wet places, which have been thus premature, have finally died.

I see a snake crossing the river at Hubbard's Bridge as swiftly as a muskrat could, which, indeed, I at first took it for, — faster than a muskrat would.

I find the ripest blueberries (*Vaccinium vacillans*) not on the very top nor on the lower slope, but on the brow, or what is called the "pitch," of the hill (Conantum) toward the light. The ripest are of course the largest, and this year very large and hard and bead-like.

Slender early spiranthes noticed.

I read of the Amazon that its current, indeed, is strong, but the wind always blows up the stream. This sounds too good to be true.

July 24. The carpenter working for Edward Hoar in Lincoln caught, two or three days ago, an exhausted or half-famished golden-winged warbler alive in their

yard. It was within half a mile that I saw one a few weeks ago. It is a sufficiently well-marked bird, by the large yellow spot on the wing (the greater coverts), yellow front and crown, and the very distinct black throat and, I should say, upper breast, above which white divided by a broad black line through the eye. Above blue-gray, with much yellowish-green dusting or reflection, *i. e.* edging, to the feathers.

Many a field where the grass has been cut shows now a fresh and very lit-up light green as you look toward the sun. This is a remarkably cool day. Thermometer 72° at 2 P. M.

The song of the field sparrow sounds more prominent of late, and quite rich and varied, and methinks I begin to hear the warbling vireo more?

July 25. P. M. — To Mr. Bradshaw's, Wayland, with Ed. Hoar.

I was surprised to see among the birds which Bradshaw has obtained the little auk of Nuttall (*Mergulus alle*, or common sea-dove), which he says that he shot in the fall on the pond of the Assabet at Knight's factory. There were two, and the other was killed with a paddle. It is said in Wilson, though apparently not *by* him, that "with us it is a very rare bird, and when seen it is generally in the vicinity of the sea." One was sent to him from Great Egg Harbor in December, 1811, as a great curiosity, and this is the one described. Rarely visits Great Britain; is found as far north as Spitzbergen at least. "The Greenlanders call it the Ice-bird from the circumstance of its being the harbinger of ice." "It

grows fat in the stormy season, from the waves bringing plenty of crabs and small fish within its reach." Nuttall says its appearance here is always solitary; driven here by stress of weather; that it has been seen in Fresh Pond, and Audubon found a few breeding in Labrador. Giraud says, "In the United States it is rare." "I am informed [it]¹ is occasionally seen by the fishermen of Egg Harbor." Is that on Long Island?² Says one was killed at "Raynor South," and it is said to breed on the arctic coast. Ross's party fed on them on the west coast of Greenland. Peabody says: "In hardiness and power of enduring cold, no bird exceeds them. . . . In Newfoundland they are called the Ice-bird, from the presumption that, unless extreme cold were approaching, they would not come so far from home. Those that are found in this state are generally exhausted by their long flight; some have quietly submitted to be taken by the hand. They are not regular visitants, but occasional solitary wanderers."

Was also surprised to see the fork-tailed stormy petrel (*Thalassidroma Leachii*) in his collection, which he caught exhausted near his house, and I think that he said his boy found another dead. Brewer says, "Habitat from Massachusetts to Newfoundland." Wilson says that one of the other species (*T. Wilsonii*) was shot on the Schuylkill near Philadelphia, and that they are sometimes found in the interior of Great Britain. Giraud says that the former, like the last, "is of rare

¹ [The brackets are Thoreau's.]

² [Great Egg Harbor and Little Egg Harbor are on the New Jersey coast.]

occurrence on the shores of Long Island," and, under the *T. Wilsonii*, that "the Petrel is never seen inland except when driven in, as it occasionally happens, by severe storms." Baird wrote to him shortly after the gale in August, 1842: "You have probably seen an account in the papers of the Petrels which had been driven inland by the storm of August. They were nearly all the Fork-tailed Petrel, *Thalassidroma Leachii*. I saw about half a dozen specimens killed near Washington. They were killed in Petersburg and Bewfort, Va., and many other places." According to Peabody, Audubon makes the fork-tailed to be much more abundant on the coast of Massachusetts than the *T. Wilsonii*, and about vessels to be the most suspicious of the three. P. says, "I have had one brought to me which was taken near Chicopee River in Springfield, 70 miles from the shore."

He had also the *Ardea exilis*, or least bittern, which he obtained on his river meadow. He sees it there occasionally and has set it up before, though it is not so common as the *viridis*. He sees it stand on the pads. It is considerably less than the *viridis* and more tawny or tawny-brown. Wilson says it "is the smallest known species of the whole tribe," and that, like the *viridis*, they skulk by day and feed by night. Peabody says, "They are seldom seen, as they rise only in sudden alarm."

He also has the long-eared owl (*Strix otus*), which he killed in the woods behind his house. Wilson says, "Except in size, this species has more resemblance to the Great Horned Owl than any other of its tribe." Probably the same with the European. Peabody says

it "is never common" in Massachusetts. Giraud has seen it in his neighborhood only in the winter.

He has the *Rallus Carolinianus*, and says that he sees another kind as common as this on the river meadows there, — a true rail, but with a much longer bill. He is very confident about it and has killed and set them up. It is undoubtedly the *R. Virginianus*, or lesser clapper rail, which, as he had already said, corresponded to an English rail which he knew. So we have this in Concord, no doubt.

He has the *Sylvia maculosa*, shot near his house. Bluish-ash above, I believe, head or crown the same, yellow throat and beneath, with many blackish spots and marks [?] on sides and breast, and white spots on inner vanes of tail-feathers, the tail being blackish.

Has two specimens of what he called the crow black-bird, shot by his house in the spring. They appeared to me surprisingly large, and he had furnished them with yellow irides, which he says are like the original ones. Nuttall says that the *Quiscalus major* has a yellow iris, the other a silvery iris. Brewer says that the former resembles the latter "to a great degree, differing from it principally in size and in its concave tail." This of Bradshaw's measured about fourteen inches long. He says these two were larger than others with them. The vertical depth of bill at base was that assigned to the *Q. versicolor* by Nuttall. As set up, I think that the tail was not convex.

Passed a field in Wayland occupied by so worthless a crop to the farmer as to attract attention, — a very undulating gravelly and stony field filled with johns-

wort (in its prime), sorrel (still red-seeded), and mulleins, between which, however, you saw the gravel, — yet very pleasant to the naturalist.

July 26. 2 P. M. — To Walden.

Rhynchospora alba, perhaps as long as *fusca*, toward east part of Hubbard's Close, *i. e.* arethusa part. Rusty cotton-grass abundant, but also going and gone to seed, say a fortnight, in same place. Common cranberry still lingers in bloom there, though berries are half grown.

Methinks the leaves begin to rustle generally, *i. e.* with a harder rustle, about June 11th, when they begin to show light under sides in the breeze.

I saw a bream swimming about in that smaller pool by Walden in Hubbard's Wood, though entirely cut off from the pond now. So they may be well off in the Wyman meadow or Pout's Nest.

July 27. A. M. — Pretty heavy rain last night.

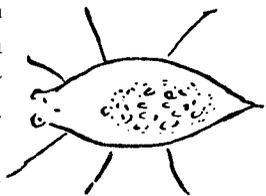
The day after a heavy rain, I can detect all the poor or sappy shingles on my neighbor's low roof which I overlook, for they, absorbing much water and not drying for a long time, are so many black squares spotting the gray roof.

2 P. M. — Sail and paddle down river.

The water has begun to be clear and sunny, revealing the fishes and countless minnows of all sizes and colors, this year's brood.

I see healthy blossoms of the front-rank polygonum just fairly begun.

I see running on the muddy shore under the pontederia a large flat and thin-edged brown bug (with six legs), some seven eighths of an inch long, pointed behind; with apparently its eggs, fifty or sixty in number, large and dark-colored, standing side by side on their ends and forming a very



conspicuous patch which covers about a third of its flat upper surface. I remove one with my knife, and it appears to stand in a thick glutinous matter. It runs through the water and mud, and falls upon its back a foot or more from my hand without dislodging them.

See, twenty rods or more down-stream, four or five young ducks, which appear already to be disturbed by my boat. So, leaving that to attract their attention, I make my way alongshore in the high grass and behind the trees till I am opposite to them. At a distance they appear simply black and white, as they swim deep, — black backs and white throats. Now I find that they have retreated a little into the pontederia, and are very busily diving, or dipping, not immersing their whole bodies, but their heads and shoulders while their bodies are perfectly perpendicular, just like tame ducks. All of them close together will be in this attitude at the same moment. I now see that the throat, and probably upper part, at least, of breast, is clear-white, and there is a clear line of white above eye and on neck within a line of black; and as they stand on their heads, the tips apparently of their tails (possibly wings ??) are conspicuously white or whitish; the upper part, also, is

seen to be brownish rather than black. I presume these to be young summer ducks, though so dark; say two thirds grown.

How easy for the young ducks to hide amid the pickerel-weed along our river, while a boat goes by! and this plant attains its height when these water-fowl are of a size to need its shelter. Thousands of them might be concealed by it along our river, not to speak of the luxuriant sedge and grass of the meadows, much of it so wet as to be inaccessible. These ducks are diving scarcely two feet within the edge of the pickerel-weed, yet one who had not first seen them exposed from a distance would never suspect their neighborhood.

See very great flocks of young red-wing blackbirds.

July 28. 2 P. M. — Up Assabet to Annursnack.

Dulichium spathaceum apparently some days. *Holcus lanatus* long done; very abundant on the west and northwest side of Painted-Cup Meadow.

A man shows me in the street a single bunch of potato-balls (*i. e.* on one stem) twenty in number, several of them quite an inch in diameter and the whole cluster nearly five inches in diameter as it hangs, to some extent emulating a cluster of grapes. The very sight of them supplies my constitution with all needed potash.

Scirpus subterminalis in the Assabet at island above Dove Rock, how long?

July 29. Rain, more or less, by day, and more in the night.

2 P. M. — To Lincoln Bridge by railroad.

Cyperus filiculmis, how long? Some time.

July 30. 2 P. M. — To Martial Miles's Swamp.

Fimbristylis capillaris, probably several days in some places. See very pretty pink yarrow, roadside opposite Whiting's orchard.

See hen-hawks perched. Are they not more at liberty now, their young being better able to shift for themselves, some of them?

Am glad to press my way through Miles's Swamp. Thickets of choke-berry bushes higher than my head, with many of their lower leaves already red, alternating with young birches and raspberry, high blueberry andromeda (high and low), and great dense flat beds of *Rubus sempervirens*. Amid these, perhaps in cool openings, stands an island or two of great dark-green high blueberry bushes, with big cool blueberries, though bearing but sparingly this year.

In a frosty hollow in the woods west of this and of the blackberry field, find a patch of amelanchier, probably *oblongifolia* (??), full of fruit now in its prime. Comparing it with the *Botryapium* of the Cliffs, it appears to be the oblong, being much more obtuse and very little serrate, and not heart-shaped like the *Botryapium*. It is an open sedge hollow surrounded by woods, with some shrubs in it rising above the sedge which have been killed by frost formerly. Here grows a pretty thick patch of the shad-bush, about a rod and a half long, the bushes about three feet high, and quite interesting now, in fruit. Firm dark-green leaves with short, broad,

irregular racemes (cluster-like) of red and dark dull-purplish berries intermixed, making considerable variety in the color, — of peculiar color among our small fruits. The ripest and largest dark-purple berries are just half an inch in diameter. You are surprised and delighted to see this handsome profusion in hollows so dry and usually so barren and bushes commonly so fruitless. These berries are peculiar in that the red are nearly as pleasant-tasted as the more fully ripe dark-purple ones. I think this crop is due to the wetness and coolness of the summer.

Though an agreeable berry, they are hardly so grateful to my palate as huckleberries and blueberries. These conspicuous red — for most are red — [berries] on rather high and thin-leaved bushes, growing open and airy, remind you a little of the wild holly, the berry so contrasts with the dark leaf.

Returning, we come through the midst of the nearly quite dry J. P. B.'s Cold Pool. Excepting a little pool in the middle, this is now one great dense bed of *Cyperus diandrus*, well out, and *Juncus Conradi*, as I call it, now in prime (together with *Juncus acuminatus*). The lower and internal part of this bed is yellow, bright-yellow like sedge, *i. e.* the cyperus stems and leaves, while the spikes of this and the rest form a soft reddish-brown crust, as it were, over all. Mixed with these over the whole area is literally a myriad of gratiola (say in its prime); a most remarkable sight, — countless yellow dots, and occasionally you see a perfectly white one among them.

Quite a sultry day, and smells mustyish, as if dog-days

were beginning. Is it not the height of summer when the locust is heard?

Hear the sound of the first flail, — some farmer, perchance, wishing to make room in his barn, or else wanting the grain. Is it wheat or rye? It may be either.

As I come through Hosmer's potato-field, I see the great clusters of potato-balls on the sandy ground, bespattered with sand, on each side. Methinks they are unusually abundant this year. Somebody has hung up one great cluster at the post-office. Is it owing to the wet and coolness?

July 31. Foggy morning.

M. Pratt sends me *Trifolium agrarium* (a long time out) from a ditch-side on his land, — yellow hop clover. This specimen is two feet high or long. He had not seen it there for some years.

Mr. Bradford finds and brings to me what I judge from a plate in Loudon to be *Potentilla recta* of southern Europe; a long time out. *Vide* press. I find the base of the plant by the east wall, in the road, about six rods south of John Flint's house.

I copy this account of *P. recta* from Persoon: "Fol. septenatis quinatisque, foliol. lanceolatis grosse dentatis, petalis obcordatis cal. majoribus, caule erecto. . . . Ad muros et ad agrorum margines. Pet. magna pallida, calyce submajora." This is under his division with digitate leaves and a naked *receptacle* (?), if this is his word.¹ But in this the outside of the calyx or receptacle is

¹ It is.

shortly pubescent, and the petals are much longer than the calyx. *Vide* Persoon's other division.¹

P. M. — Up Assabet.

Decidedly dog-days, and a strong musty scent, not to be wondered at after the copious rains and the heat of yesterday.

At mid-afternoon I am caught in another deluging rain² as I stand under a maple by the shore. Looking on a water surface, you can see as well as hear when it rains very hard. At first we had a considerable shower which but slightly dimpled the water, and I saw the differently shaded or lit currents of the river through it all; but anon it began to rain very hard, and there were a myriad white globules dancing or rebounding an inch or two from the surface, where the big drops fell, and I heard a sound as if it rained pebbles or shot. At this season the sound of a gentler rain than this, *i. e.* the sound of the dripping rain on the leaves, which are now dark and *hard*, yields a dry sound as if the drops struck on paper, but six weeks ago, when the leaves were so yellowish and tender, methinks it was a softer sound, as was the rustling.

Now, in the still moonlight, the dark foliage stands almost stiff and dark against the sky.

At 5 P. M. the river is nine and seven eighths inches above summer level.

We may expect to see any common small-seeded European plant springing up by our roadsides in course of time.

¹ Do not find another so much like it.

² A great deal fell.

Before it rained hardest I could see in the midst of the dark and smoother water a lighter-colored and rougher surface, generally in oblong patches, which moved steadily down the stream, and this, I think, was the new water from above welling up and making its way downward amid the old. The water or currents of a river are thus not homogeneous, but the surface is seen to be of two shades, the smoother and darker water which already fills its bed [?] and the fresh influx of lighter-colored and rougher, probably more rapid, currents which spot it here and there; *i. e.*, some water seems to occupy it as a lake to some extent, other is passing through it as a stream, — the lacustrine and the fluvial water. These lighter reaches without reflections (?) are, as it were, water wrong side up. But do I ever see these except when it rains? And are they not the rain-water which has not yet mingled with the water of the river?