XV.—REPORT ON THE PROPAGATION OF SCHOODIC SALMON AT GRAND LAKE STREAM, MAINE, IN 1886-'87.

By Chas. G. Atkins.

The management of the Schoodic Station for this year was placed in the hands of the assistant superintendent, Mr. W. O. Buck, of Bucksport, whose chief helper was the experienced foreman, Mr. William H. Munson, of Princeton, who has served the station in that capacity since its organization, and to whose skill and fidelity the success of the work has been largely due.

Mr. Munson began work the first of September and placed the barrier-nets across the outlet of Grand Lake on the 15th of that month. The pounds were built at the usual date, and made ready for the capture of fish on the 28th of October. The run of fish was rather small, not quite equal to that of 1885. Of the 752 taken in all, 505, or 67 per cent., were females, and 247, or 33 per cent., males. The fish proved of satisfactory size and fecundity, the females yielding an average of 1,935 eggs each, a higher rate than ever before observed, except in 1884, when the yield was 2,349 eggs per fish.

The fishing and spawn-taking was accomplished under the disadvantage of very low water and a current too sluggish to attract the fish into the inclosures so freely as desirable, and a larger number than usual spawned on the shallows above our nets. But for extra exertions to capture the recusants, by stretching additional nets, the loss from this cause would have been very serious.

In 1885, at the close of the work of spawn-taking, the greater number of the salmon in hand were marked by cutting out a V-shaped piece from the outer margin of the anal fin. This year all the salmon that were handled were closely scrutinized for these marks, and 56 of them (5 males and 51 females) were found to bear what appeared to be the mark sought for. In each of these cases there was a distinct, well-defined triangular transparent spot in the requisite position. It appeared as though the rays and integuments had been reproduced so as to completely fill out the outline of the fin, but that the new growth had as yet assumed no color. So distinct were these marks that both Mr. Buck and Mr. Munson were fully convinced that they were the marks of 1885. Such a result was unexpected and great interest will attach

to a repetition of the experiment. These 56 marked fish average in weight 3.4 pounds, and in length 20.5 inches, in both points less than the general average of 1885. For a more exact experiment Mr. Buck has devised a system of marks consisting of holes to be punched through the fins, by which numerals can be indicated and individual fishes identified on their return, and these marks were applied to a large part of the fishes handled in 1886.

The eggs obtained numbered in all 942,500. They were all placed for development in the cold water of the river house, and there remained till the month of February, when they were removed to the cove house, preparatory to division and shipment, which was accomplished in March. The losses from lack of impregnation and other causes reduced the eggs available for division to 855,500. The legal reserve took from these 214,000, and the remaining 641,500 were divided among the subscribers to the fund as follows: Massachusetts, 132,000; New Hampshire, 132,000; United States, 377,500.

The eggs for shipment were packed as usual in Sphagnum moss, and transferred by express, over the usual route, including a ride of 36 miles in the open air, and all reached their destination safely.

The 214,000 eggs reserved for Grand Lake were hatched and planted with the very small loss of 1,044 eggs and fry. A lot of 104,000 sea-salmon eggs were sent over from Bucksport by the Maine Commissioners and hatched at the Schoodic Station to be planted in waters tributary to the St. Croix. They were likewise successfully hatched with a loss of but 255 eggs and fry, and were planted in Junior Stream and Upper "Dobsey" Stream June 15, 17, and 20, 1887.

The following tabular statements will be found to give additional details of interest:

TABLE I.—*Fishing record at Grand Lake Stream, Maine*, 1886.

[Each day of 24 hours, ending at 7 a. m.]

Date.	Day weather.	Night weather.	Height of Grand Lake.	Temperature, 7 a. m.	
				Air.	Water.
1886.			*Ft. In.*	°	°
Oct. 28–29	Clear a. m., overcast p. m.; light easterly wind.	Partly overcast, wind increasing, more northerly.	1 8	32	46
Oct. 29–30	Mostly clear, northerly wind; moderate.	Sprinkling at p. m., raining balance of night; light E. wind.	1 7	37	46
Oct. 30–31	Raining a. m., light E. winds; misty p. m.	Cloudy and damp; calm, little or no rain.	1 7	43	46
Oct. 31–Nov. 1	Cloudy a. m., calm p. m.	Clear, 9 p. m.; misty in morning.	.....	44	48
Nov. 1–2	Misty morning, clearing toward noon.	P. m. fine; light W. wind, becoming misty toward morning.	.....	40	48
Nov. 2–3	Misty morning, wind SE.; misty all day.	Overcast, wind rising and veering to W.	.....	.....	.....
Nov. 3–4	Misty morning, clearing with shower in p. m.	Clear, bright night; calm; growing colder.	.....	48	49
Nov. 4–5	Clear, frosty morning, bright, light W. wind.	Grew colder till midnight; frosty, then damp and warmer.	.....	25	49

TABLE I.—*Fishing record at Grand Lake Stream, Maine,* 1886—Continued.

Date.	Day weather.	Night weather.	Height of Grand Lake.	Temperature, 7 a. m.	
				Air.	Water.
1886.			*Ft. In.*	°	°
Nov. 5- 6	Calm, cloudy morning, white frost; cloudy all day.	Wind rising SE.; heavy showers; gale from SE.	.....	38	46
Nov. 6- 7	Cloudy, high wind from SE.; heavy rain a. m., clearing p. m.	Beautiful evening; moderate W. wind.	1 6	51	51
Nov. 7- 8	Fine morning, overcast, noon clearing.	Clear, W. wind; becoming overcast.	.....	24	45
Nov. 8- 9	Chilly, overcast, moderating wind.	Clear, becoming cloudy; wind veering to E.	.....	23	43
Nov. 9-10	Cloudy, calm	Calm, cloudy, damp; a little rain.	.....	28	43
Nov. 10-11	Light E. wind, misty, clearing.	Calm, clearing	.....	38	44
Nov. 11-12	Light W. wind, becoming northerly; fair.	Fair; becoming cloudy; light E. and NE. wind rising.	.....	29	44
Nov. 12-13	Snow about 7 a. m., wind NE.; rain p. m.	Rain, NE. wind first part, cloudy latter.	.....	29	42
Nov. 13-14	Snow and rain, NE. wind, becoming NW.; noon snow-squalls.	Colder, with snow-squalls; less cloudy.	.....	32	42
Nov. 14-15	Wind NW., growing more cloudy.	NW. gale, moderating toward morning.	.....	27	40
Nov. 15-16	High NW. wind; fair; wind moderating at night.	Calm, cloudy	.....	20	37
Nov. 16-17	Calm, overcast	Snow, followed by icy rain	.....	20	37
Nov. 17-18	Rain, E. wind, becoming southerly.		.....	32	37

Date.	Adult Schoodic salmon.						Salmon, parr, and smolts.	Remarks.
	Daily catch.			Daily summary.				
	Males.	Females.	Total.	Males.	Females.	Total.		
1886.								
Oct. 28-29	19	6	25	.....	.....	.....	2 p.	2 suckers, 2 small salmon, lot of chubs; 3 gates open.
Oct. 29-30	19	10	29	38	16	54	3 p.	3 parr, lot of suckers and chubs; 5 gates open at night.
Oct. 30-31	.....	.....	.....	.....	.....	.....	.....	
Oct. 31-Nov. 1	48	32	80	86	48	134	2 p.	2 suckers, 1 sea-salmon, 2 parr; 3 gates open.
Nov. 1- 2	26	26	52	112	74	186	1 p.	3 gates open.
Nov. 2- 3	20	42	62	132	116	248	2 p.	Do.
Nov. 3- 4	17	21	38	149	137	286	.....	1 togue, 2 whitefish; 3 gates open.
Nov. 4- 5	25	51	76	174	188	362	1 p.	1 togue, 4 pickerel, meshed; 3 gates open.
Nov. 5- 6	21	85	106	195	273	468	.....	4 togue, 5 pickerel, meshed, 2 whitefish; 3 gates open.
Nov. 6- 7	9	52	61	204	325	529	1 p.	6 pickerel, meshed, 1 sucker, 4 togue; 3 gates open.
Nov. 7- 8	19	75	94	223	400	623	.....	1 pickerel, meshed; 3 gates open.
Nov. 8- 9		18	27	232	418	650	.....	3 brook-trout, 3 suckers, 2 brook-trout, 1 pickerel, meshed; 3 gates open.
Nov. 9-10	9							
Nov. 10-11	3	10	13	235	428	663	.....	
Nov. 11-12	3	16	19	238	444	682	.....	
Nov. 12-13	1	22	23	239	466	705	.....	4 pickerel, meshed, 4 suckers, 1 whitefish in trap.
Nov. 13-14	1	21	22	240	487	727	.....	
Nov. 14-15	3	2	5	243	489	732	.....	1 pickerel.
Nov. 15-16	2	10	12	245	499	744	.....	1 whitefish.
Nov. 16-17	.....	4	4	245	503	748	1 p.	1 parr.
Nov. 17-18	2	.....	2	247	503	750	.....	1 brook-trout.
	.....	2	2	247	505	752	.....	

TABLE II.—*Record of spawning operations, Grand Lake Stream,* 1886.

Date.	Fish at first handling.							Females spawned.			Eggs taken.	
	Total.	Males.	Females.					First time.	Second time.	New females yielding some defective eggs.	Weight.	Number.
			Total.	Unripe.	Ripe.	Spent.	Diseased.					
1886.											*Lbs. ozs.*	
Oct. 29	25	19	6	2	3	1	0	4	0	1	1 9	3,900
30	29	19	10	5	5	0	0	5	0	2	3 5	8,200
Nov. 1	82	50	32	10	22	0	0	26	8	4	18 7	45,700
2	52	26	26	6	18	2	0	23	26	6	19 6	48,200
3	62	20	42	12	29	1	0	29	24	(?)	23 3	57,700
4	38	17	21	2	19	0	0	27	30	5	22 2	55,100
5	76	25	51	8	41	2	0	54	27	10	42 11	106,350
6	106	21	85	11	70	4	0	70	52	17	56 10	141,000
7	61	9	52	7	44	1	0	44	0	8	32 4	80,350
8	94	19	75	20	47	8	0	56	111	(?)	55 4	137,700
9	27	9	18	8	9	1	0	20	56	2	19 7	48,400
10	13	3	10	2	7	1	0	22	17	.....	13 8	33,600
11	19	3	16	6	9	1	0	21	19	.....	16 14	42,035
12	23	1	22	0	14	7	1	15	22	.....	15 2	39,100
13	22	1	21	2	11	8	0	30	14	3	18 12	46,742
14	5	3	2	0	2	0	0	6	24	.....	5 4	13,030
15	12	2	10	2	6	2	0	12	5	.....	9 2	22,730
16	4	0	4	0	1	3	0	8	12	.....	4 1	10,120
17	2	2	0	0	0	0	0	0	5	.....	0 13	2,529
18	2	0	2	0	0	2	0	.....	.....	.....	.....	.....
	751	249	505	103	357	41	1	487	452	.....	277 12	942,500

TABLE III.—*Statement of shipments of eggs of Schoodic salmon from Grand Lake Stream, Maine, in March,* 1887.

Date.	Consignee and address.	Number of eggs—			Number of cases.	Distance transported (estimated).	Time en route.	Condition on unpacking.	Dead on unpacking.
		Belonging to States.	Belonging to United States.	Total.					
1887.						*Miles.*	*Days.*		
Mar. 2	E D. Carlton, Spirit Lake, Iowa.	.....	30,000	30,000	1	1,890	8	Fair	96
	R. O. Sweeny, Saint Paul, Minn.	.....	30,000	30,000	1	1,938	5	Good	30
	Baker Bros., Rome City, Noble County, Ind.	.....	2,500	2,500	1	1,380	7	....do	6
	F. A. Walters, Bloomingdale, N. Y.	.....	30,000	30,000	1	790	8	....do	100
	G. W. Delawder, Baltimore, Md.	.....	10,000	10,000	1	805	.....		
5	E. G. Blackford, New York, N. Y.	.....	65,000	*65,000	3	615	.....	Reported arrived in good order at final destination.	
7	E. Z. Leiter, Lake Geneva, Wis.	.....	5,000	5,000	1	1,500	5	Good.	
	George A. Seagle, Wytheville, Va.	.....	50,000	50,000	1	1,150	6	Very good	44
	F. Mather, Cold Spring Harbor, N. Y.	.....	40,000	40,000	1	640	3	Excellent	150
	H. T. Root, Providence, R. I.	.....	10,000	10,000	1	434	3	....do	8
8	E A. Brackett, Winchester, Mass.	132,000	30,000	162,000	3	398	3	Good.	
9	E. B. Hodge, Plymouth, N. H.	132,000	25,000	157,000	4	516	3	Fair	144
	W. D. Marks, Paris, Mich.	.....	25,000	25,000	1	1,431	5	Good	247
24	F. Mather, Cold Spring Harbor, N. Y.	.....	25,000	†25,000	1	640	5	Excellent.‡	
		264,000	377,500	641,500	21				

* To Germany, 40,000; England, 25,000.
† To France.
‡ Mr. Mather's report of condition on arrival at Cold Spring Harbor.

Observations on temperature, etc., at Grand Lake Stream, Maine, from September 13, 1886, to June 29, 1887.

Date.	Temperature at 7 a. m.					Height of Grand Lake.	Rain.		Snow.	
	Air.	Water.					Hour when measured.	Rain-gauge.	Hour when measured.	New snow.
		River or lake.	River house.	West aqueduct.	South aqueduct.					
1886.	°	°	°	°	°	Ft. In.		Inches.		Inches.
Sept. 13	49	66				2 2	7 a. m.	1¼		
14	36	65½								
15	53	64				2 1½				
16	41	63								
17	60½	64					7 a. m.	0½		
18	59	63				2 2				
19	42½									
20	45									
21	35	62				2 1½				
22	32½									
23										
24	44	60½				2 1				
25	36½									
26	51									
27	50	58				1 11				
28	43	57								
29	48					2 0	8 a. m.	1½		
30	36	56								
Total								3½		
Means	44.8	61.7								
Oct. 1	53	56				2 0				
2	36	54				1 11				
3	32	54½								
4	33½	54								
5	36	55				1 11				
6	41	55½								
7	36	54								
8	33½	54								
9	45	54								
10	46	54½				1 10				
11	50	56½								
12	62									
13	35	55				1 10				
14	34									
15	47	51½								
16	35									
17	27½	48				1 9½				
18	35									
19	27									
20	30									
21	52	47								
22	33½									
23	31									
24	29	45				1 7				
25	27½									
26	35									
27	26½									
28	38									
29	32	46				1 6				
30	38	46								
31	43	48					1 p. m.	0⅝		
Total								0⅝		
Means	37.1	52								
Nov. 1	43	48	48			1 6				
2	37	47	47							
3	42	48	48							
4	48	48	48			1 6½				
5	25	46	46							
6	40	46	46			1 6½				
7	51	51	51				3 p. m.	0⅛		
8	24	45	44½							

Observations on temperature, etc., at Grand Lake Stream, Maine, etc.—Continued.

Date.	Temperature at 7 a. m.					Height of Grand Lake.	Rain.		Snow.	
	Air.	Water.					Hour when measured.	Rain-gauge.	Hour when measured.	New snow.
		River or lake.	River house.	West aqueduct.	South aqueduct.					
1886.	°	°	°	°	°	Ft. In.		Inches.		Inches.
Nov. 9	23	43	43	.....	.....	1 6½	.....	.....	.....	.....
10	28	43	43	.....	.....	.....	.....	.....	.....	.....
11	38	44	44	.....	.....	.....	.....	.....	.....	.....
12	28	44	44	.....	.....	.....	.....	.....	.....	.....
13	29	42	41	.....	.....	1 6	.....	.....	11 a. m.	1½
14	34	42	42	.....	.....	.....	7 a. m.	1	.....	.....
15	27	40	40	.....	.....	.....	.....	.....	7 a. m.	0½
16	20	37	36	.....	.....	.....	.....	.....	.....	.....
19	33	38	38	.....	.....	1 8	7 a. m.	1½	.....	.....
20	24	37	36½	.....	.....	.....	.....	.....	.....	.....
21	20	36	36	.....	.....	.....	.....	.....	.....	.....
22	21	36	36	.....	.....	.....	.....	.....	.....	.....
23	19	35	34½	.....	.....	1 9	.....	.....	6 p. m.	1
24	41	37	37	.....	.....	.....	7 a. m.	0½	.....	.....
25	24	36	36	.....	.....	.....	.....	.....	.....	.....
26	31	35	35	.....	.....	.....	.....	.....	.....	.....
27	12	35	35	.....	.....	.....	.....	.....	.....	.....
28	20	35	34½	.....	.....	.....	.....	.....	.....	.....
29	22½	36	36	.....	.....	.....	.....	.....	.....	.....
30	42	37	37	.....	.....	1 11	7 a. m.	0½	.....	.....
Total	.....	.....	.....	.....	.....	.....	.....	5.2	.....	2½
Means	30.2	41	40.8	.....	.....	.....	.....	.....	.....	.....
Dec. 1	43	37½	37½	40	38	.....	7 a. m.	0⅛	.....	.....
2	21	.....	37	.....	.....	2 0	.....	.....	.....	.....
3	3	.....	34	.....	.....	.....	.....	.....	7 a. m.	10
4	— 5	.....	32½	.....	.....	.....	.....	.....	.....	.....
5	—10	33	32½	37½	35	2 0½	.....	.....	.....	.....
6	9	.....	33	.....	.....	.....	.....	.....	7 a. m.	3½
7	11	.....	33	.....	.....	.....	.....	.....	.....	.....
8	16	.....	33	.....	.....	.....	.....	.....	7 a. m.	4½
9	22	.....	33	.....	.....	.....	.....	.....	.....	.....
10	— 5	33	32½	30½	38	2 1	.....	.....	.....	.....
11	30	.....	32½	.....	.....	.....	.....	.....	.....	.....
12	17	.....	33	.....	.....	.....	.....	.....	.....	.....
13	16½	33½	33⅛	39	37½	2 1	.....	.....	.....	.....
14	10	.....	33⅛	.....	.....	.....	.....	.....	.....	.....
15	16	.....	33⅛	.....	.....	.....	.....	.....	10 a. m.	1
16	17	34	33⅛	.....	.....	2 1½	.....	.....	.....	.....
17	— 6	.....	32⅛	.....	.....	.....	.....	.....	7 a. m.	4½
18	7	.....	32⅛	.....	.....	.....	.....	.....	8 p. m.	2
19	31	.....	33	40	37½	.....	.....	.....	.....	.....
20	0	33	32⅛	.....	.....	2 2	.....	.....	.....	.....
21	19	.....	32⅛	.....	.....	.....	.....	.....	.....	.....
22	20	.....	33	.....	.....	.....	.....	.....	.....	.....
23	24½	33	33	40	38	2 2	.....	.....	.....	.....
24	28	.....	33	.....	.....	.....	.....	.....	.....	.....
25	34½	.....	33	.....	.....	.....	7 a. m.	0⅞	.....	.....
26	5	.....	33	.....	.....	.....	.....	.....	.....	.....
27	16½	34	33½	40	38½	.....	.....	.....	.....	.....
28	— 4	.....	32½	.....	.....	.....	.....	.....	7 a. m.	2⅛
29	—10	.....	32½	.....	.....	.....	.....	.....	.....	.....
30	—18	.....	32½	.....	.....	.....	.....	.....	.....	.....
31	— 8	33	32½	39	37	.....	.....	.....	.....	.....
Total	.....	.....	.....	.....	.....	.....	.....	1⅞	.....	27⅛
Means	11.3	33.8	33.1	39.4	37.4	.....	.....	.....	.....	.....
1887.										
Jan. 1	26½	33	32½	39	37	.....	.....	.....	7 a. m.	2⅛
2	16	.....	33	.....	.....	.....	.....	.....	3 p. m.	4½
3	— 8	.....	32½	.....	.....	.....	.....	.....	.....	.....
4	—22	.....	32½	.....	.....	.....	.....	.....	.....	.....
5	—11	32½	32½	38½	37	.....	.....	.....	.....	.....
6	25	.....	33	.....	.....	.....	.....	.....	3 p. m.	¼
7	20	.....	32½	.....	.....	.....	.....	.....	.....	.....

Observations on temperature, etc., at Grand Lake Stream, Maine, etc.—Continued.

	Date.	Temperature at 7 a. m.					Height of Grand Lake.	Rain.		Snow.	
		Air.	Water.					Hour when measured.	Rain-gauge.	Hour when measured.	New snow.
			River or lake.	River house.	West aqueduct.	South aqueduct.					
	1887.	°	°	°	°	°	*Ft. In.*		*Inches.*		*Inches.*
Jan.	8	—16		32⅓							
	9	—24		32½							
	10	8		32½	39½	38				1 p. m.	3⅞
	11	—10	33	32½							
	12	17		33							
	13	10		33							
	14	— 1		33							
	15	10		33						7 a. m.	8½
	16	2½	33	32⅓	40	37⅛					
	17	3		32⅛							
	18	12⅛		32⅛						7 a. m.	2¾
	19	—24		32½							
	20	— 7	32⅛	32⅛							
	21	34		33							
	22	— 4		33	40	38½				5 p. m.	1¼
	23	35		33							
	24	26½		33				7 a. m.	0½		
	25	13		33½				7 a. m.	0¾		
	26	30½	34½	34	37	36					
	27	—10		32½						7 a. m.	1
	28	— 4		33							
	29	47		34							
	30	44		34							
	31	24	35	34	37½	36					
	Total								1¼		28
	Means	8.5	33.4	32.9	38.8	37.1					
Feb.	1	0	35⅛	34	37	35⅛					
	2	— 8		33⅓							
	3	4		33½							
	4	17		33½						7 a. m.	2
	5	— 6	34	33	36	35					
	6	2		33						5 p. m.	1
	7	4		33							
	8	3		33						6 p. m.	4⅛
	9	34	34	34	36	35		7 a. m.	0⅛		
	10	0		34							
	11	28⅛		34							
	12	14		33⅛						7 a. m.	6
	13	—10	33	33							
	14	—21		32⅓							
	15	26		33	36⅛	35				3 p. m.	2⅛
	16	30⅛		33⅛	36⅛	35					
	17	29	34⅛	34	37	35				7 a. m.	2
	18	— 1		33⅛	37	35					
	19	38		34	37	35⅛				7 a. m.	5⅛
	20	24⅛	34⅛	34	37	35⅛					
	21	12		34	37	35⅛					
	22	—11		34	37	35⅛					
	23	3⅛		33⅛	37	35⅛				7 a. m.	1⅞
	24	14		34	37⅛	36					
	25	— 1⅛		33	37⅛	36				7 a. m.	7½
	26	— 5		33	38	36					
	27	32		34	37⅛	36				7 a. m.	5
	28	12⅛		33	37	36					
	Total										37.9
	Means	9.5	34.2	33.5	37	35.5					
Mar.	1	— 8	33	33	37	36					
	2	— 1		33	37	36					
	3	10		33	37⅛	36					
	4	—13		33	37⅛	36					
	5	—20		32½	37	36					
	6	— 7		33	37	36					

Observations on temperature, etc., at Grand Lake Stream, Maine, etc.—Continued.

Date.	Temperature at 7 a. m.					Height of Grand Lake.	Rain.		Snow.	
	Air.	Water.					Hour when measured.	Rain-gauge.	Hour when measured.	New snow.
		River or lake.	River house.	West aqueduct.	South aqueduct.					
1887.	°	°	°	°	°	*Ft. In.*		*Inches.*		*Inches.*
Mar. 7	15		33½	37½	36					
8	30	34½	34	37½	36				7 a. m.	2
9	4		34	37½	36½					
10	23		34½	38	36½					
11	26		34½	38	36½					
12	32½		34½	38	36½				7 a. m.	5½
13	33		35	38	36					
14	28		35	37½	36					
15	27	34½	34½	37½	36	4 5				
16	24½		34	37	35½					
17	32½		34	37	35				10 a. m.	1½
18	38		34½	37½	35½					
19	40½		34½	37½	35½					
20	25		34½	37½	36	4 5				
21	21½		35	38	36					
22	34		35	38	36½					
23	35½			38	36½				7 a. m.	12
24	7			38	36					
25	32			37½	36				11 a. m.	1½
26	15½	34		37	35½	4 5½				
27	22			37	36					
28	26			37	36				11 a. m.	3
29	28			37½	36					
30	14			37½	35½					
31	18½			37½	35½	4 6				
Total										23.4
Means	19.2	34	34	37.4	36					
Apr. 1	7	34½		37	36	4 6				
2	25			37	36					
3	29			37	36				7 a. m.	8
4	27½			36½	36					
5	35	34½		36½	35½	4 7				
6	24			36½	35½					
7	13			36	36					
8	18½			36	36					
9	27			36	35½					
10	40			36	35					
11	44½	34½		35½	35	4 9				
12	26			35½	35					
13	20			35½	35					
14	28			35½	35½					
15	30			35½	35½					
16	29			35½	35					
17	40	34½		35½	35½	4 10			7 a. m.	3
18	26			35	35					
19	30			35½	35					
20	33½			35	35					
21	32			35	35					
22	37			35	35					
23	38	36		35	35	5 4				
24	31			35½	35					
25	28			35½	35					
26	32			35½	35½				6 p. m.	2½
27	36	37½		36	35½	5 7				
28	38			36½	36					
29	40			37	36					
30	43	38		37½	36½	6 3	6 p. m.	2⅞		
Total								2.9		11.1
Means	30.3	35.6		35.7	35.4					
May 1	34	38½		38	37	6 4				
2	30			38½	37	6 5				
3	40			38½	37	6 5½				

Observations on temperature, etc., at Grand Lake Stream, Maine, etc.—Continued.

Date.	Temperature at 7 a. m.					Height of Grand Lake.	Rain.		Snow.	
	Air.	Water.					Hour when measured.	Rain-gauge.	Hour when measured.	New snow.
		River or lake.	River house.	West aqueduct.	South aqueduct.					
1887.	°	°	°	°	°	Ft. In.		Inches.		Inches.
May 4	45½			39½	38	6 7½				
5	46	39		40	38	6 8½				
6	43			41	38½	6 9				
7	39			42	39	(*)				
8	44			42	39					
9	42½			42½	39½					
10	41	39½		42½	39½					
11	48			43	39½					
12	50			43	40½					
13	39			43½	41					
14	42			44	42½					
15	51½			44½	43½					
16	48	44		45	44					
17	38			45	44½					
18	50			45	44½					
19	52½			45	45					
20	56	46		45½	45					
21	59			45½	45					
22	45			46	45½					
23	49			46	46					
24	60	47		47	46½					
25	58½			47½	47					
26	57			48	47½		7 a. m.	0¼		
27	47			48	47½					
28	44	47		48	47					
29	49			47½	46½		7 a. m.	0¼		
30	49			46	46					
31	52	48		46	46					
Total										
Means	46.7	43.6		43.9	43.6			1.2		
June 1	52	48½		46	46½					
2	54			46	46½					
3	60			46½	46½					
4	49½			47	48		7 a. m.	1⅝		
5	52			47	48					
6	58	55		47	48					
7	64			47½	48½					
8	61			47½	48					
9	57			47½	49½		10 a. m.	0⅜		
10	58½	59		47	49					
11	60			47	49					
12	59			47	49					
13	63	60		47	49					
14	56			47	49					
15	(†)									
16	(†)									
17	60			47½	49		7 p. m.	0½		
18	52			47½	49					
19	58	62		47½	49					
20	(†)									
21	(†)									
22	56			48½	50		7 a. m.	0¾		
23	63½			49½	51		7 a. m.	0¼		
24	61			50	52½		9 a. m.	1		
25	(†)									
26	(†)									
27	(†)									
28	(†)									
29	68	64		51½	52½					
Total										
Means	58.2	58.1		47.6	48.9			4.5		

* Water-gauge swept away by ice. † Observer absent distributing fry.

BUCKSPORT, ME., *November* 8, 1887.