

XXX.—REPORT OF OPERATIONS AT THE HAVRE DE GRACE SHAD- HATCHING STATION DURING PART OF THE SEASON OF 1883.

By LIEUT. W. F. LOW, U. S. N.

TABLE I.—Record of temperature observations made at Battery Station, on the Susquehanna River, from April 27, 1883, to June 3, 1883, by Lieut. W. F. Low, U. S. N.

Date.	Temperature at—								
	6 a. m.			12 m.			6 p. m.		
	Air.	Water.	Jars.	Air.	Water.	Jars.	Air.	Water.	Jars.
1883.									
April 27.....							58	51	56
April 28.....	64	50	58	62	58	55	56	58	55
April 29.....	48	50	53	43	50	53	51	52	54
April 30.....	47	50	55	61	52	55	52	55	56
May 1.....	47	52	57	58	58	54	54	55	54
May 2.....	44	53	55	63	57	57	64	58	58
May 3.....	49	56	58	65	57	60	66	61	60
May 4.....	58	58	62	68	60	61	66	63	63
May 5.....	50	60	62	51	59	60	56	60	62
May 6.....	58	60	62	60	62	62	62	59	62
May 7.....	54	61	63	64	62	63	66	64	64
May 8.....	62	63	63	74	64	64	74	66	67
May 9.....	62	64	65	72	66	66	66	66	66
May 10.....	54	64	64	74	67	67	76	68	69
May 11.....	66	67	68	70	67	68	70	68	69
May 12.....	56	67	66	60	66	66	64	69	68
May 13.....	60	65	67	67	67	66	68	68	69
May 14.....	50	65	65	65	63	64	56	63	64
May 15.....	58	63	64	70	65	65	68	67	66
May 16.....	52	61	63	61	62	62	63	65	65
May 17.....	48	61	62	60	64	63	62	67	66
May 18.....	54	63	64	68	66	65	76	68	67
May 19.....	56	64	65	72	67	66	70	70	68
May 20.....	55	66	67	64	67	68	70	68	68
May 21.....	56	67	68	52	67	67	66	68	68
May 22.....	61	68	67	64	67	67	60	68	69
May 23.....	50	65	66	56	65	65	54	64	65
May 24.....	51	62	63	67	64	64	69	64	65
May 25.....	59	63	63	75	64	64	71	65	65
May 30.....	62	67	68	69	67	67	66	69	69
May 31.....	69	68	69	72	69	69	72	70	70
June 1.....	59	67	68	70	68	69	70	70	72
June 2.....	62	69	69	72	70	70	66	70	71
June 3.....	60	68	69	72	69	70	70	70	71

TABLE II.—Record of shad-hatching operations conducted at Battery Station, at the head of Chesapeake Bay, from April 19, 1883, to June 1, 1883, by Lieut. W. F. Low, U. S. N.

Date.	Eggs obtained.	Loss of eggs.	Fish hatched.	Date of hatching.	Fish deposited in local waters.	Other disposition.	Date of deposit or transfer.	Remarks.
Apr. 19	25,000	25,000	.....	.....	.....	.....	.....
Apr. 20	30,000	2,000	28,000	May 2	28,000	.....	May 4	
Apr. 21	75,000	25,000	50,000	May 2	50,000	.....	May 4	
Apr. 28*	95,000	16,000	79,000	May 7	79,000	.....	May 10	
Apr. 30	110,000	45,000	65,000	May 7	65,000	.....	May 10	
May 1	40,000	5,000	35,000	May 8	35,000	.....	May 11	
May 2	155,000	12,000	143,000	May 10	143,000	.....	May 11	
May 3	180,000	20,000	160,000	May 10	160,000	.....	May 12	
May 4	75,000	10,000	65,000	May 10	65,000	.....	May 12	
May 5	240,000	28,000	212,000	May 12	212,000	.....	May 13	
May 7	500,000	60,000	440,000	May 13	440,000	.....	May 14	
May 8	200,000	24,000	176,000	May 15	176,000	.....	May 16	
May 9	270,000	58,000	214,000	May 10	214,000	.....	May 17	
May 10	175,000	50,000	125,000	May 18	125,000	.....	May 19	
May 11	100,000	36,000	64,000	May 17	64,000	.....	May 19	
May 12	180,000	39,000	141,000	May 19	141,000	.....	May 20	
May 13	45,000	15,000	30,000	May 20	30,000	.....	May 21	27,000 eggs from fish in pool; 25,000 eggs hatched successfully.
May 14	286,000	54,000	232,000	May 20	232,000	.....	May 21	
May 15	32,000	8,000	29,000	May 21	29,000	.....	May 22	
May 16	356,000	48,000	308,000	May 23	.....	308,000	May 24	Pennsylvania Fish Commission.
May 17	323,500	27,000	296,500	May 24	296,500	.....	May 25	Of a number of eggs taken from roe after shad was dressed and impregnated with milt from males in live box 50 per cent came up and 10 per cent hatched.
May 18	226,000	39,000	187,000	May 23	187,000	.....	May 25	
May 19	1,000,000	180,000	820,000	May 24	820,000	.....	May 26	55,000 eggs from shad that had been dead from one to one-half hours. 45,000 hatched successfully.
May 21	505,000	79,000	426,000	May 27	.....	800,000	May 28	Pennsylvania Fish Commission.
May 22	468,000	72,000	396,000	May 28	.....	126,000	May 30	Fish Commission car No. 1.
May 23	237,000	34,000	203,000	May 29	.....	396,000	May 30	Do.
May 24	149,000	9,000	140,000	May 30	.....	203,000	May 30	Do.
May 25	65,000	5,000	60,000	May 31	.....	140,000	June 2	H. E. Quinn.
May 28	80,000	5,000	25,000	June 3	25,000	60,000	June 2	Do.
May 31	38,000	23,000	15,000	June 4	15,000	.....	June 4	
June 1	153,000	33,000	120,000	June 4	120,000	.....	June 4	

* April 22 to 27, inclusive, no operations.