

XXVII.—REPORT OF DISTRIBUTION OF FISH AND EGGS BY THE  
U. S. FISH COMMISSION FROM JANUARY 1, 1886, TO JUNE 30,  
1887.\*

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The aggregate number of fish and eggs distributed by the U. S. Fish Commission, as collated from the reports of stations, in the period comprised between January 1, 1886, and June 3, 1887, was 210,628,413.

The actual number distributed, however, was several hundred thousand less than this, the discrepancy resulting from the fact that the eggs of Salmonidæ produced at one station have been transferred to and hatched out at other stations and consequently have been reported twice, once as eggs and again as fry or older fish. The aggregate distribution by species is shown in the following summary, from which it will be seen that the whitefish, the shad, and the carp still constitute the main features of the work of the U. S. Fish Commission.

Summary of distribution.

Species.	Eggs.	Fish.	Total.
Whitefish ( <i>Oregonus clupeiiformis</i> )	32,000,000	62,070,000	94,670,000
Brook trout ( <i>Salvelinus fontinalis</i> )	82,000	19,199	91,199
Lake trout ( <i>Salvelinus namaycush</i> )		162,723	162,723
Rainbow trout ( <i>Salmo irideus</i> )	420,000	366,412	495,412
Atlantic salmon ( <i>Salmo salar</i> )	754,000	446,588	1,200,588
Land-locked salmon ( <i>Salmo salar</i> , subsp. <i>sebago</i> )	377,500	44,017	421,517
Brown trout ( <i>Salmo fario</i> )	84,500	26,500	111,000
Snad ( <i>Otupea sapidissima</i> )	10,718,000	99,732,000	110,470,000
Carp ( <i>Cyprinus carpio</i> )		136,163	136,163
Gold-fish ( <i>Carassius auratus</i> )		2,805	2,805
Black bass ( <i>Micropterus dolomieu</i> )		48	48
Mad-eye perch ( <i>Ambloplites rupestris</i> )		2,328	2,328
Grayling ( <i>Thymallus tricolor</i> )		2	2
Trout ( <i>Tinca vulgaris</i> )		1,202	1,202
Salibling ( <i>Salvelinus salvelinus</i> )	18,000		18,000
Smelt ( <i>Osmerus mordax</i> )		2,100,000	2,100,000
Lobsters		5,000	5,000
White perch ( <i>Morone [Morone] americanus</i> )		68	68
Sunfish ( <i>Lepomis aureus</i> )		125	125
Brook pike ( <i>Esox americanus</i> )		14	14
Soles		19	19
Eels		200	200
Rock-fish ( <i>Urolophus striatus</i> )		75,000	75,000
Codfish ( <i>Gadus morhua</i> )		662,000	662,000

<sup>1</sup> Of this number 1,711 were one or more years old.

<sup>2</sup> Of this number 6,923 were one or more years old.

<sup>3</sup> Of this number 16,482 were one or more years old.

\* This report includes also the distribution of 1885-'86 from Baird Station, California, and Cold Spring Harbor Station, New York, not previously reported.

The following summary of fish and eggs furnished for distribution, arranged by stations, will indicate the character and extent of the work accomplished by each station.

*Summary of fish and eggs furnished for distribution by the stations during the season.*

Stations.	Species.	Eggs.	Fry.	Large fish.
Alpena, Mich	Whitefish	*29,070,000		
Baird, Cal	Rainbow trout	†136,000		
Do	do	*145,000	*39,300	
Bucksport, Me	Atlantic salmon	*754,000		
Central Station, D. C	Whitefish		†1,191,000	
Do	do		*3,900,000	173
Do	Lake trout		†18,025	719
Do	Rainbow trout		†5,300	
Do	do	*5,330		2
Do	Grayling			15
Do	Atlantic salmon			*103
Do	Brook trout		*5,000	
Do	Brown trout		*3,000	
Do	Shad	*8,718,000	*36,018,000	*7
Do	Carp (from Ft. Washington seine)			*3
Do	Tench			*200
Do	Red-eye perch			
Cold Spring Harbor, N. Y	Whitefish		†942,300	
Do	Lake trout		†137,775	
Do	Brown trout	†27,000	†23,500	
Do	do	*50,000		
Do	do	*18,000		
Do	Salbling			
Do	Atlantic salmon		†446,573	
Do	Land-locked salmon	*25,000	†31,020	
Do	Shad		†100,000	
Do	Smelt		†2,100,000	
Do	Lobsters		†5,000	25
Do	Red-eye perch			68
Do	White perch			123
Do	Sunfish			14
Do	Brook pike			19
Do	Soles			
Carp ponds	Carp for public waters		*5,974	
Do	Carp for private ponds		*95,175	
Do	Carp for State commissioners		*32,660	
Do	Goldfish		*2,755	*12
Do	Breeding carp to other stations			
Do	Tench		*750	*200
Do	Eels			
Steamer Fish Hawk	Shad	*3,330,000	*18,934,000	
Fort Washington Station, Md	do	*57,385,000	*2,050,000	
Grand Lake Stream, Me	Land-locked salmon	*352,500		
Steamer Lookout	Rockfish		†75,000	
Havre de Grace, Md	Shad		*42,650,000	
Northville Station, Mich	Whitefish	*32,600,000	*33,000,000	
Do	Lake trout			*6,550
Do	Rainbow trout			*3,397
Do	Brook trout	*50,000		*768
Do	Brook trout	*82,000		
Do	Brown trout	*7,500		
Wood's Holl, Mass	Codfish		†662,000	*1,200
Wytheville, Va	Lake trout			*12,368
Do	Rainbow trout	*98,000		*750
Do	Brook trout		*2,488	*12,997
Do	Land-locked salmon			*2,102
Do	Red-eye perch			*48
Do	Black bass			
Do	Tench		*450	
Do	Carp for private ponds		*1,025	
Do	Carp for open river		*430	
Do	Goldfish		*50	

\* Season of 1886-'87.

† Season of 1885-'86.

By comparison with reports of distribution of previous years it will be seen that the trout work is growing very much in importance, and to make adequate provisions for the rapidly increasing demand for the Salmonidae will necessitate considerable extension of the work of the U. S. Fish Commission in this direction.

The details of distribution of the most important species, as summarized above, are as follows:

(a) WHITEFISH (*Coregonus clupeiformis*).

Of this species 32,600,000 eggs were distributed from Northville Station, Michigan, the present season and were allotted as follows:

To the State Commissioners, to be hatched and planted in public waters..	22,500,000
To foreign countries (international exchange).....	5,000,000
To other U. S. Fish Commission stations.....	5,100,000
Total .....	32,600,000

The eggs which were retained and hatched at the Michigan stations yielded 62,070,000 fry, which were distributed as follows:

To Lake Ontario.....	3,000,000
To Lake Erie .....	12,000,000
To Lake Huron .....	30,000,000
To Lake Michigan .....	17,000,000
To Long Lake .....	20,000
To Clear Lake.....	50,000
Total .....	62,070,000

(b) BROOK TROUT (*Salvelinus fontinalis*).

Eggs of this species are collected at the Northville Station from fish reared in the ponds. The number furnished for distribution during the season of 1886-'87 was 82,000, which were assigned as follows:

To State commissioners and individuals.....	37,000
To Central and Wytheville Stations, for hatching and rearing.....	35,000
To foreign countries (international exchange).....	10,000
Total.....	82,000

(c) LAKE TROUT (*Salvelinus namaycush*).

No eggs of this species were collected during the season.

(d) RAINBOW TROUT (*Salmo irideus*).

Eggs of this species are collected for propagation and distribution at Baird Station, California, Northville Station, Michigan, and Wytheville Station, Virginia. At Baird Station the eggs are obtained chiefly from wild native fish. At Northville and Wytheville Stations the breeders have been reared from eggs artificially impregnated at Baird Station and hatched and reared at the stations.

The total production available for distribution was as follows:

	Season 1885-'86.	Season 1886-'87.	Total
From Baird Station, California:			
Hatched and planted in McCloud River .....	5,000	39,300	44,300
Hatched for ponds at station .....	10,000		10,000
Distributed to applicants and eastern United States stations .....	131,000	145,000	276,000
From Northville Station, Michigan:			
To Michigan State commission .....			25,000
To foreign countries (international exchange) .....			25,000
Hatched for rearing at station .....			
From Wytheville Station, Virginia:			
To Central Station .....			5,000
To State commissioner and individuals .....			38,000
To foreign countries (international exchange) .....			55,000
Hatched for rearing at station .....			
Total .....			478,300

(e) ATLANTIC SALMON (*Salmo salar*).

Eggs of this species distributed by the Commission are all furnished by the collecting station at Bucksport, Me. The production for the year was 779,000, which were distributed as follows:

Date.	Consignee.	Address.	Number.	Condition on arrival.
Feb. 1	F. Mather .....	Cold Spring Harbor, N. Y.	250,000	Excellent.
2	F. A. Walters .....	Bloomington, N. Y.	250,000	Good.
3	E. B. Hodge .....	Plymouth, N. H.	100,000	Do.
21	F. Mather .....	Cold Spring Harbor, N. Y.	40,000	Excellent.
23	do .....	do	10,000	Do.
24	W. H. Munson .....	Grand Lake Stream, Me.	89,000	Good.
23	do .....	do	15,000	Do.
	Total shipped on account United States.		754,000	
	Retained at hatchery for rearing		25,000	
	Total		779,000	

(f) SCODDIC OR LAND-LOCKED SALMON.

The station at Grand Lake Stream, Me., reported 352,500 eggs of this species as available for assignment. These were distributed as follows:

Date.	Consignee.	Address.	Number.	Condition on arrival.
Mar. 2	E. D. Carleton .....	Spirit Lake, Iowa	30,000	Fair.
2	R. O. Swooley .....	Saint Paul, Minn.	30,000	Good.
2	Buker Bros .....	Rome City, Ind.	2,500	Good.
2	F. A. Walters .....	Bloomington, N. Y.	30,000	
2	G. W. Delawder .....	Baltimore, Md.	10,000	
5	Herr von Behr, care E. G. Blackford .....	New York, N. Y.	30,000	
5	Max von dem Borne, care E. G. Blackford .....	do	10,000	
5	National Fish Culture Association, care E. G. Blackford .....	do	25,000	
7	H. T. Root .....	Providence, R. I.	10,000	Excellent.
7	L. Z. Leiter .....	Lake Geneva, Wis.	5,000	Good.
7	G. A. Seagle .....	Wytheville, Va.	50,000	Very good.
7	F. Mather .....	Cold Spring Harbor, N. Y.	40,000	Excellent.
8	E. A. Brackett .....	Winchester, Mass.	30,000	Good.
9	E. B. Hodge .....	Plymouth, N. H.	25,000	Fair.
22	F. Mather .....	Cold Spring Harbor, N. Y.	25,000	
	Total		352,500	

## SUMMARY.

To State commissioners and individuals.....	287,500
Deutsche Fischerer-Verein .....	30,000
Max von dem Borne .....	10,000
National Fish Culture Association .....	25,000
Total .....	352,500

(g) BROWN TROUT (*Salmo fario*).

To the courtesies of Herr von Behr, president of the Deutsche Fischerer-Verein, and Herr Max von dem Borne, of Berneuchen, Germany, the U. S. Fish Commission is indebted for several consignments of eggs of the brown trout. The number received, their condition as reported on arrival, and the assignments made of the eggs are given below:

From Herr von Behr (international exchange) .....	37,000
From Herr Max von dem Borne.....	22,500
	<u>59,500</u>

They were distributed as follows:

To Pennsylvania commission .....	10,000
To Wytheville Station .....	10,000
To Northville Station.....	20,000
To Cold Spring Harbor Station.....	9,500
To New Hampshire commission .....	5,000
To Central Station.....	5,000
	<u>59,500</u>

A shipment of 50,000 brown trout eggs sent by Herr von dem Borne were three-fifths dead on arrival, and the balance will probably prove a total loss.

(h) SAIBLING (*Salvelinus salvelinus*).

The Commission is indebted also for eggs of the saibling to Herr von Behr and Herr Max von dem Borne. The number received and their distribution is as follows:

From Herr von Behr .....	15,000
From Herr Max von dem Borne.....	12,000
	<u>27,000</u>

Their distribution was:

Northville Station.....	15,000
Cold Spring Harbor Station.....	9,000
New Hampshire commission .....	3,000
	<u>27,000</u>

(i) SHAD (*Clupea sapidissima*).

The total distribution of shad for the season was 110,370,000, which were contributed as follows:

Battery Station, Susquehanna River.....	42,650,000
Fish Hawk Station, Susquehanna River.....	20,934,000
Central Station, Potomac River.....	44,736,000
Fort Washington Station, Potomac River.....	2,050,000

A summary of the distribution of fry by river basins is as follows :

Penobscot River.....	922,000
Kennebec River.....	1,047,000
Tributaries of Narraganset Bay.....	1,275,000
Hudson River and tributaries.....	*2,185,000
Tributaries of Delaware Bay.....	15,099,000
Tributaries of Chesapeake Bay.....	70,199,000
Tributaries of Albermarle Sound.....	5,322,000
Tributaries of South Atlantic coast.....	3,569,000
Tributaries of Gulf of Mexico.....	7,048,000
Inland waters.....	1,014,000
Total.....	97,680,000

(j) CARP (*Cyprinus carpio*).

The production of this species for distribution the present season was not sufficient to meet all requests filed by applicants and gave rise to considerable dissatisfaction on the part of those who expected to be supplied. The diminished production was occasioned by the work of reclamation of the Potomac flats, which necessitated the interruption of the drainage of the ponds and prevented their proper preparation for the spawning of the fish. This cause is, of course, temporary, and we may reasonably expect in the future to be able to produce the carp in sufficient numbers to supply all demands. The total distribution of carp for the season aggregated 133,769 in thirty-two States and four Territories, as follows:

Distribution of carp by U. S. Fish Commission during season 1886-'87.

State.	Point of distribution.	Counties included.	Applicants supplied.	Fish issued—		Total issued.
				To individual applicants.	To State commissioners.	
Alabama.....	Birmingham and Greenville.....	45	152	3,710	.....	3,110
California.....	San Francisco.....	23	33	660	.....	660
Florida.....	Jacksonville.....	14	77	2,260	475	2,735
Connecticut.....	Boston, Mass.....	8	36	720	.....	720
Delaware.....	Washington, D. C.....	3	18	360	400	760
District of Columbia.....	do.....	.....	3	60	.....	60
Georgia.....	Atlanta.....	67	181	3,725	250	3,975
Illinois.....	Quincy.....	75	221	4,520	.....	4,520
Indiana.....	Indianapolis.....	73	257	5,250	.....	5,250
Idaho Territory.....	Salt Lake City, Utah.....	4	7	140	.....	140
Iowa.....	Des Moines.....	90	187	3,970	5,520	9,490
Kansas.....	Kansas City.....	83	607	12,620	400	13,020
Kentucky.....	Lexington.....	42	98	2,150	\$249	2,399
Maine.....	Boston, Mass.....	15	61	1,250	.....	1,250
Maryland.....	Washington, D. C.....	10	31	650	1,200	1,850
Massachusetts.....	Boston.....	13	37	770	.....	770
Minnesota.....	Saint Paul.....	29	53	1,060	3,500	4,560

\* Does not include the product of 6,661,000 eggs shipped to Cold Spring Harbor to be hatched and turned into Hudson River and tributaries.

† Does not include the product of 4,074,000 eggs shipped to Wilmington, Del., to be hatched and turned into the tributaries of Delaware Bay.

‡ Planted in Lake Emma, Florida.

§ Deposited in city reservoir at Lexington, Ky.

Distribution of carp by U. S. Fish Commission during season 1886-87—Continued.

State.	Point of distribution.	Countries included.	Applicants supplied.	Fish issued.		Total issued.
				To individual applicants.	To State commissioners.	
Michigan		(*)	(*)			
Missouri		(*)	(*)			
Nebraska	Omaha	6	109	2,230		2,230
New Hampshire	Boston, Mass.	11	11	220		220
New Jersey	New York and Washington, D. C.	17	35	770		770
New York	New York City	52	236	5,050	3,310	8,360
North Carolina	Raleigh and Charlotte	52	207	4,190		4,190
Ohio	Columbus	81	284	5,710	14,750	10,460
Pennsylvania	Washington, D. C.	61	310	6,980		6,980
Rhode Island	Boston, Mass.	5	8	170	2,000	2,170
South Carolina	Columbia and Charleston	24	91	1,870		1,870
Tennessee	Nashville	47	149	2,980		2,980
Utah Territory	Salt Lake City	20	544	10,880	1,080	11,960
Vermont	Boston, Mass.	12	29	580	1,000	1,580
Virginia	Washington, D. C., and Wytheville.	68	241	4,910	500	5,410
West Virginia	Washington, D. C.	24	47	940	1,500	2,440
Wisconsin	Madison	52	168	3,780	12,090	15,780
Colorado	Denver	18	28	560		560
Wyoming	Laramie	2	2	40	500	540
<b>Total</b>		<b>1,183</b>	<b>4,599</b>	<b>95,135</b>	<b>38,634</b>	<b>133,769</b>

\* Supplied from stock belonging to State fish commission.  
 † Deposited in Muskingum River, at McConnellsville, Ohio.  
 ‡ Deposited in Reed Creek, Virginia.

(k) GOLDFISH (*Carassius auratus*).

The total distribution of this ornamental species for the season aggregated 2,755, which were distributed to 392 applicants in twenty-two States and two Territories in lots of from 4 to 10.

The summary of distribution by States is as follows:

State.	Number of applicants.	Number of fish.	State.	Number of applicants.	Number of fish.
Alabama	3	24	New Jersey	4	24
Connecticut	1	4	New York	11	62
Florida	2	12	North Carolina	4	36
District of Columbia	273	1,630	Ohio	4	24
Georgia	11	256	Pennsylvania	11	84
Illinois	3	18	Rhode Island	1	6
Indiana	3	18	South Carolina	1	12
Iowa	10	72	Tennessee	5	30
Kansas	1	50	Utah	3	87
Maryland	14	102	Virginia	19	114
Massachusetts	3	18	West Virginia	2	12
Michigan	1	4			
Minnesota	2	56	<b>Total</b>	<b>392</b>	<b>2,755</b>

CAR AND MESSENGER SERVICE.

During the season of 1886 the cars of the Commission were moved 45,861 miles, as follows:

	Paid.	Free.	Total.
	Miles.	Miles.	Miles.
Car No. 1:			
Carp distribution.....	3,559		3,559
Shad distribution.....	4,183		4,183
Car No. 2:			
Carp distribution.....	4,390	1,213	5,703
Shad distribution.....	10,327	74	10,401
Whitefish distribution.....	637	3,919	4,556
Trout distribution.....	6,156	2,356	8,709
Car No. 3:			
Carp distribution.....	2,536		2,536
Trout distribution.....	922		922
Shad distribution.....	5,004	488	5,492
Total.....	37,711	8,150	45,861

Of the above transportation 8,150 miles were furnished by the railroads gratuitously, and 37,711 miles paid for at an average rate of 20 cents per mile.

The number of miles traveled by messengers on detached service was as follows (all paid):

Carp distribution.....	Miles. 13,701
Shad distribution.....	12,259
Whitefish distribution.....	7,784
Trout and perch distribution.....	6,802
Soles distribution.....	989
Total.....	41,535

As heretofore many of the railroads, especially the great continental lines, have responded freely and generously to requests for free transportation, and we have thus been enabled to extend the benefits of the distribution to remote sections of the country, which it would otherwise have been impracticable for us to supply on account of the enormous expense of such distribution.

The following is a list of the railroads which furnished free transportation:

CAR No. 2.

Date.	Species.	Railroad.	Route.	Distance.
				Miles.
1886-'87.				
Nov. 20	Carp.....	Missouri Pacific.....	Saint Louis to Kansas City and return.	574
23	do.....	do.....	Kansas City to Omaha.	213
Dec. 1	do.....	Utah Central.....	Ogden to Salt Lake City and return.	74
4	do.....	do.....	Salt Lake City to Milford and return.	452
Aug. 19	Trout.....	Saint Louis and San Francisco.	Saint Louis to Verona.	274
20	do.....	do.....	Verona to Nichols.	32
22	do.....	do.....	Nichols to Kansas City.	242
	do.....	Kansas City, Fort Scott and Gulf.	Nichols to Mammoth Springs and return.	288
Feb. 2	do.....	Flint and Pere Marquette.	Northville, Mich., to Reed City and return.	326
12	do.....	do.....	Northville, Mich., to Toledo and return.	124



CAR No. 2.—Continued.

Date.	Species.	Railroad.	Route.	Distance.
				Miles.
1886-87.				
Feb. 22	Trout	Flint and Pere Marquette	Northville, Mich., to Wayne Junction and return.	22
25	do	do	Northville, Mich., to Detroit and return.	52
Mar. 3	do	do	Northville, Mich., to East Saginaw and return.	160
7	do	do	Northville, Mich., to Detroit.	26
Feb. 22	do	Michigan Central	Wayno Junction to Jackson and return.	116
	do	Lake Shore and Michigan Southern.	Jackson and Auburn Junction.	78
2	do	Grand Rapids and Indiana.	Reed City to Richmond, Ind., and return.	606
	Shad	Utah Central	Salt Lake City to Ogden, Utah, and return.	74
	Whitefish	Flint and Pere Marquette	Northville to Ludington and return.	434
	do	do	Northville to Holly, Mich., and return.	58
	do	do	Northville to Wayne Junction and return.	22
	do	do	Northville to Ludington and return.	434
	do	do	Northville to Monroe, Mich., and return.	74
	do	do	Northville to Detroit, Mich., and return.	56
	do	do	Northville to Toledo and return.	124
	do	do	do	124
	do	do	Northville to Wayne Junction and return.	22
	do	do	Northville to Toledo and return.	124
	do	do	Northville to Bay City and return.	186
	do	do	Toledo, Ohio, to Northville.	62
	do	do	Holly to Grand Haven and return.	244
	do	Detroit, Grand Haven and Milwaukee.	Wayne Junction to Michigan City and return.	420
	do	Michigan Central	Wayne Junction to New Buffalo and return.	400
	do	do	Detroit to Suspension Bridge and return.	456
	do	Canada Southern	Suspension Bridge to Oswego, N. Y., and return.	302
	do	Rome, Watertown and Ogdensburg.	Toledo to Sandusky and return.	98
	do	Lake Shore and Michigan Southern.	do	98
	do	do	Monroeville to Toledo, Ohio.	53
	do	do	do	54
	do	Chicago and West Michigan	New Buffalo to Saint Joseph and return.	54
		Total		3, 019

CAR No. 3.

May 22	Shad	Easton	Boston, Mass., to Portland, Me.	108
23	do	Maine Central	Portland to Bangor, Me.	136
24	do	do	Bangor to Portland, Me.	136
25	do	Easton	Portland, Me., to Boston, Mass.	108
		Total		488

HATCHING OF SHAD EGGS EN ROUTE.

The first successful attempt in this direction was made in the spring of 1886, when 600,000 shad eggs were transferred from the Susquehanna River Station to Portland, Oregon, successfully hatched after arrival at destination and the fry deposited in good condition in the Columbia and Willamette Rivers in the State of Oregon.

The application of this method during the season of 1887 has greatly increased our facilities for distribution and, by enlarging the carrying

capacity of the cars, has introduced a corresponding reduction in the cost of distribution.

Only one car (No. 3) is as yet equipped for this service. This made three trips, carrying each time, in addition to its full complement of fish, 1,200,000 eggs, and experience has shown that the hatching of the eggs in this moving station can be conducted as conveniently and with as good results as at the fixed stations. The number of hatching jars in use was 12, each requiring one-half a gallon of water per minute and having a capacity of 90,000 eggs.

It is desirable that the equipment of car No. 3 should be increased to 60 jars, which will afford hatching room for 5,000,000 shad eggs or about 8,000,000 whitefish eggs. It is recommended that car No. 2 be similarly equipped and provided with circulating hatching and collecting apparatus, thus giving each a carrying capacity four-fold greater than if young fish only are transported.

Should the increase of the work of shad production necessitate, as is probable, the construction of another car, it is desirable that this should be built and equipped with special reference to its use as a field or moving station for the hatching of eggs of shad and whitefish.

#### TRANSFER OF EGGS TO DISTANT STATIONS.

The number of shad eggs collected during the season was greater than we could care for at Battery and Central Stations. The necessity of making proper provision for this excess led to the application of the methods of transportation now in use for the transfer of eggs from Fort Washington to Central Station to the transfer of large lots of eggs to remote stations, where the eggs were hatched and planted in adjacent waters.

The eggs, packed on shallow, cloth-lined wooden trays, were crated up in packages of convenient size for handling (each package containing 250,000 eggs), packed in the refrigerators of car 3, the temperature regulated so as to stand at about 60° F., and transferred to destination. Of the four lots of 2,000,000 each, moved in this way, two arrived at destination in good condition, one in inferior condition, and one proved almost a total loss. This lot, however, was delayed 12 hours en route, and the eggs for safety stored in a refrigerating apartment where the temperature approached freezing. To this is doubtless to be attributed the loss of this shipment.

We have yet to learn much as to the conditions determining the successful transfer before we can be assured of uniform success in making shipments of eggs instead of fish to distant points, but doubtless the movement of eggs instead of fish will be the main feature of future distributions, since eggs can be transferred in large numbers at little relative cost to distant points convenient to the waters to be stocked, and hatched out there in improvised field stations or in a car equipped as a hatching station.

WASHINGTON, D. C., July 25, 1887.