

XLI.—CORRESPONDENCE CONNECTED WITH THE TRANSMISSION  
OF EGGS OF THE QUINNAT SALMON AND OTHER SALMONIDÆ  
TO EUROPEAN COUNTRIES IN 1878 AND PRIOR YEARS.

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GERMANY.

*H. Bartels to S. F. Baird.*

IMPERIAL GERMAN COMMISSION FOR THE  
CENTENNIAL EXHIBITION,  
GERMAN PAVILION, CENTENNIAL GROUNDS,  
*Philadelphia, October 19, 1876.*

Professor BAIRD,  
*United States Building:*

SIR: I have the honor to inform you that the Prussian minister of the agricultural department has notified me by a cable telegram that he accepts, with his greatest thanks, your very kind offer for sending eggs of the Californian salmon to Prussia, and he begs you to forward these eggs to the address of the "Fischzucht-Anstalt, Hameln, Province Hannover."

I am, yours, very respectfully,

H. BARTELS.

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*H. Bartels to S. F. Baird.*

IMPERIAL GERMAN COMMISSION FOR THE  
CENTENNIAL EXHIBITION,  
GERMAN PAVILION, CENTENNIAL GROUNDS,  
*Philadelphia, December 23, 1876.*

In reply to your valued favor of the 22d instant, I beg leave to inform you that, about the forwarding of salmon eggs to Germany, it will be the best you write officially to his excellency the Prussian minister of the agricultural department, Dr. Friedenthal, in Berlin, who will give the necessary information to Hameln.

For losing no time any more I have already communicated to the minister your very kind offer, so that the necessary information can be given to the agency in Bremen for accepting and forwarding the eggs immediately on their arrival in Bremen; therefore it will be sufficient if you will be kind enough as to inform the minister when you send the eggs and by what steamer they will be shipped.

I shall leave here next week and shall give me the honor to call on your office in Washington, where I have business for some days.

I am, yours very respectfully,

H. BARTELS.

Prof. SPENCER F. BAIRD,

*Washington, D. C.*

Closing this letter I have received a letter from the minister, Excellenz Friedenthal, who informs me that he has communicated to the magistrate of Hameln, Hannover, your kind offer. Will you please inform the magistrat at Hameln when the salmon eggs will be shipped and by what steamer.

Yours,

H. B.

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*The German Minister to S. F. Baird.*

IMPERIAL GERMAN LEGATION,

*Washington, 21st March, 1877.*

SIR: In the letter you directed on the 6th of February last to the minister of the agricultural department of Prussia, you were kind enough to offer to Dr. Friedenthal some eggs of the California salmon, provided Congress would continue the appropriations, and that the Prussian department would pay the cost of packing and shipment.

Dr. Friedenthal has now requested me to express to you his warmest thanks for this kind offer, and to beg you that, if possible, 50,000 embryonated eggs of the California salmon may at the proper time of this year be forwarded to the "Fischzucht-Anstalt in Hameln, Provinz Hannover."

I beg you, sir, to be kind enough to inform me if, and when, such transportation would be possible, and to inform me also of the expenses aforesaid, in order to be restituted by this legation.

Accept, sir, the renewed assurances of my high consideration.

SCHLÖEZER,

*German Minister.*

Prof. SPENCER F. BAIRD.

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*H. E. Rockwell to the German Minister.*

WASHINGTON, D. C., *March 22, 1877.*

SIR: I have the honor to acknowledge, in behalf of Professor Baird, who is temporarily absent from the city, the receipt of your letter of the 21st, and to say that a memorandum has been made of the request contained therein for 50,000 eggs of the Californian salmon.

On the return of Professor Baird you will doubtless receive a suitable response to your communication.

Respectfully,

H. E. ROCKWELL,

*Secretary.*

Baron SCHLÖEZER,

*German Minister, Washington, D. C.*

*Fred Mather to S. F. Baird:*

STEAMER ODER, IN NORTH SEA,  
October 23, 1878.

MY DEAR PROFESSOR: Last evening at seven I delivered three boxes of eggs to the agent of the N. G. Lloyds at Southampton for Paris. They were in perfect condition, but I regret that I did not put a caution in each box concerning the temperature.

The eggs were down to 42°, and if they plunge them into water from 15° to 20° higher it may be fatal.

I wrote a caution to Mr. Wattel by mail but fear that the eggs may reach him first. The other eggs are in equally good order.

I telegraphed Dr. Finsch from Southampton, as per request by letter from him received there, "all good."

Package for Southport sent with request to divide with Mr. Moore. I repacked those in moss and don't know condition. Also for the aquarium, two *Menopoma*, present from Blackford; five horse-feet (all I could get), and three tortoises, *Emys picta* and *Pseudemys rugosa*, all alive.

I find such good accommodations for soles in the Oder that I had a plan to leave Bremen on the 27th and return in her to Southampton November 5, but Dr. Finsch says that Mr. von Behr wants me to go to Hameln on Weser. Still I may do it if time and soles permit.

Very truly,

FRED MATHER.

Prof. S. F. BAIRD,  
Washington, D. C.

*Fred Mather to S. F. Baird:*

BREMEN, GERMANY, October 24, 1878:

MY DEAR PROFESSOR: I arrived at Bremerhaven at 9 a. m. and delivered 100,000 eggs for Holland to Mr. Garrell on telegram order from Mr. Heck, whom Mr. Bottemanne informed me by letter, received at Southampton, would meet me. He will arrive at night.

Dr. Finsch and Director Haack met me. The eggs were in splendid condition, and people have flocked to see them. To-morrow I go to Hameln with eggs, and hope to sail for England on Saturday or Sunday next. I have not get given up the hope of getting back in the Oder, but will go to Cunard office, London, to see Mr. Franklyn or learn if he is in Liverpool.

Will keep you advised of all movements, and if soles are not ready will come back in Oder without waiting, as last year's experience in that line was bad.

Very truly, yours,

FRED MATHER.

Prof. S. F. BAIRD,  
Washington, D. C.

*Extract from the Weser Zeitung of October 25, 1878.*

[Translation.]

When we made a detailed report relative to the first transport of California Salmon eggs to Europe last year (No. 11062 and 11063, 1st and 2d November, 1877), we unfortunately could record but a partial success: of 300,000 eggs, only 25,000 arrived in a perfect state. This was the lot brought over in the chest constructed by Mr. Mather, and described in last year's report. The rest of the eggs, which had been packed in moss and gauze, which Mr. Mather was not authorized to repack after his plan, were all spoiled, as, in consequence of the heat produced by the decay of the moss, all the eggs had been hatched. In spite of this failure, the problem of transporting salmon eggs over great distances has been brilliantly solved. The second transport of 250,000 California salmon eggs, which arrived to-day, in the Lloyd steamer Oder, Captain Leist, has confirmed the views formerly expressed. The eggs, just arrived, like last year's, come from the United States breeding establishment on the McCloud River, in California, about 200 miles from Sacramento. They left the latter city in an ice-car of the Pacific Railroad, September 28, and on reaching Chicago were taken in charge by Mr. Mather, who was commissioned to escort the sending to Europe. Mr. Mather repacked the eggs in his chests, which had been improved since last year, and embarked on board the Oder, which, after a quick and pleasant passage, arrived in the Weser this morning at about nine o'clock. Mr. Mather was received by Mr. Finsch, who has repeatedly represented the German Society of Fish-breeders, also by Mr. Haack, director of the Imperial Fishbreeding Establishment, in Hünigen, both congratulating Mr. Mather most sincerely and heartily upon his brilliant success, which was immediately announced by telegraph to the highly-deserving president of the society, Herr von Behr-Schmoldow. According to the orders of the managers of the society, 45,000 eggs will be transferred to Hünigen, to go eventually to the Rhine; 115,000 to the renowned breeding establishment of Mayor Schuster, near Freiburg (Baden), for the Rhine and Danube; 2,000 to Bonn and Münden (Hannover); 30,000 to the establishment in Hameln, for the Weser, and 58,000 have been sent off to Berlin this evening, where they are to be subdivided among various smaller establishments, under the management of the well-known fish-breeder, Max von dem Borne; the Mark, part of Silesia, Saxony, and Mecklenburg being the recipients. Besides the eggs intended for Germany, Mr. Mather brought over 100,000 for Holland, 100,000 for France, and 15,000 for England; all of which arrived in an equally good condition, the loss amounting to scarcely  $\frac{1}{2}$  per cent.; that is no more than would be the case in breeding establishments. After this success there is no longer a doubt that salmon eggs can be carried just as well to Australia. The California salmon (*Salmo*

*quinnat*) is a different species from ours, and shows its peculiarity in its development. It has been previously remarked that the young fish, though only just hatched, possesses much more vitality than our salmon. It is more vigorous, lively, and voracious than ours. It is then not astonishing that the Californians developed themselves very well in Hün-ingen, and grew with surprising rapidity. The little one-year-old fishes which Director Haack keeps in a pond for the sake of observation and study are already a span long, quick and lively, whose well-being in our rivers is not to be doubted. A considerable number have been transferred to the Rhine, Danube, and Weser. The new sending will now supply our rivers with the stranger in much greater quantities, and we owe this to the society of fish-breeders, whose beneficent efforts deserve a much more lively sympathy, as also to Prof. Spencer F. Baird, in Washington, the Commissioner of Fish and Fisheries of the United States, who presented to the society, and consequently to Germany, this valuable sending.

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*Deutsche Fischerei-Verein to S. F. Baird.*

BERLIN, December 14, 1878.

DEAR SIR: We cannot allow our seventh circular of 1878 to cross the Atlantic without offering our special tribute of thanks to that kind friend in America who has enabled us to proclaim in Mr. Haack's report (No. 11) that the introduction of *Salmo quinnat* into German waters and its domestication may henceforth be considered as in a manner accomplished. Be pleased, therefore, to accept our renewed assurance that we are fully alive to a sense of your unvarying and helpful courtesy.

Mr. Mather's skill has again obtained a signal triumph. Very few losses occurred on the road. We may confidently hope that a few weeks hence nearly a quarter of a million young Californian salmon will be lustily permeating the various river highways of this country. The Danube and its tributaries have claimed our special attention, inasmuch as they possess no migratory salmon and seemed to wait for the arrival of one so constituted as the *quinnat*.

We should hail the day, dear sir, when we might be permitted to offer you, for the benefit of American rivers or lakes, any inhabitants of our waters unknown beyond the ocean.

You will receive copies of a prospectus lately published for the international fishery exhibition of 1880, to which we beg to draw your very especial attention. As we said in our November circular, when forming the scheme of that exhibition, we reckoned chiefly upon the willingness of America to send specimens of that gigantic progress which pisciculture and other cognate matters have there achieved.

Thanking you again and again, we remain, dear sir, yours very sincerely,

The committee of the Deutsche Fischerei-Verein:

VON BEHR.	O. HERMES:
G. VON BUNSEN:	P. MAGNUS.
W. PETERS:	L. WITTMACK.
MARCARD.	FASTENAU.
V. BAUMBACH.	FINNOR.
F. JAGOR.	GREIFF.
E. FRIEDEL.	

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FRANCE.

*Society d'Acclimation to S. F. Baird.*

(Cable message received at Halifax, October 9, 1877.)

COMMISSIONER FISHERIES,  
*Halifax, N. S.*

Envoyez œufs.

SOCIÉTÉ D'ACCLIMATION.

11 Paris.

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*Drouyn de Lhuys to S. F. Baird.*

SOCIÉTÉ D'ACCLIMATION,  
*Paris, le 19 octobre, 1877.*

MONSIEUR: La société d'acclimation a reçu avec la plus vive reconnaissance l'offre si généreuse contenue dans votre lettre du 20 septembre dernier et je m'empresse d'être auprès de vous, en cette circonstance, l'interprète de tous ses remerciements.

L'introduction du saumon de Californie dans beaucoup de nos rivières aurait une trop haute importance économique pour que la société d'acclimation ne soit pas fort heureuse de pouvoir en tenter l'utile essai.

Un de nos agents sera chargé d'aller recevoir les œufs, dont vous avez bien voulu nous annoncer, par le télégraphe, la prochaine arrivée à Southampton. Ces œufs seront confiés aux soins des personnes les plus compétentes, et rien ne sera négligé en vue de mener à bonne fin la très-intéressante expérience qu'il va nous être permis d'entreprendre, grâce à la libéralité du gouvernement des États-Unis.

Veillez agréer, Monsieur, l'assurance de mes sentiments de haute considération.

Le Président,

DROUYN DE LHUYS.

Monsieur SPENCER F. BAIRD,  
*Halifax, Nova Scotia.*

*Raveret-Wattel to S. F. Baird.*

SOCIÉTÉ D'ACCLIMATATION,  
Paris, *october 29, 1878.*

MONSIEUR: J'ai la satisfaction de vous informer que nous verrons de recevoir, dans les meilleures conditions possibles, le généreux envoi que vous avez bien voulu nous faire encore, d'œufs de saumon de Californie.

Ces œufs ont immédiatement été confiés à ceux de nos sociétaires la plus en situation de leur donner de bons soins, et une large part a été réservée au ministère des travaux publics (service des pêches); le bon état dans lequel ils nous sont parvenus nous donne tout lieu d'espérer une réussite complète.

En vous réitérant l'expression de la reconnaissance de la société pour votre concours si bienveillant, je vous prie, monsieur, d'agréer la nouvelle assurance de mes sentiments les plus respectueux et dévoués.

Le secrétaire des séances,

RAVERET-WATTEL.

Hon. SPENCER F. BAIRD,

*Président de la commission des pêcheries nationales*

*à Washington, États-Unis.*

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*Louis de Bebian to Fred Mather.\**

COMPAGNIE GENERALE TRANSATLANTIQUE,  
*55 Broadway, New York, February 13, 1878.*

DEAR SIR: Your favor of 11th at hand. I shall be pleased to take the case of salmon eggs free of charge to Havre. The steamer will sail early in the morning of the 20th, therefore case must be here on the 19th. Mark case to the consigner's address in Havre, and send it to me with *all charges prepaid*. There is an ice-box on our steamer belonging to party who ship "fresh beef" and I will endeavor to get him to allow me to put the case in there, where no doubt it will be in good condition on its arrival in Havre. Mark case distinctly and notify me of its shipment to me, and I will send receipt to you and consignee in Havre.

Yours truly,

LOUIS DE BEBIAN.

Mr. FRED MATHER,

*271 High Street, Newark, N. J.*

P. S.—If case is destined for Paris we can notify our agent in Havre to forward, you guaranteeing charges between Havre and Paris in case receiver refuses.

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\*In connection with a proposed sending of eggs of land-locked salmon.

## THE NETHERLANDS.

*H. Ocaux to S. F. Baird.*

NETHERLANDS AMERICAN STEAM NAVIGATION COMPANY,  
27 South William Street, New York, August 31, 1877.

SPENCER F. BAIRD, Esq.,

*United States Commission Fish and Fisheries,*

*Halifax, Nova Scotia :*

DEAR SIR: In reply to your esteemed favor of the 27th instant, I beg to inform you that the steamers of our line are appointed to leave this port for Rotterdam as follows: Steamship Rotterdam, September 13; steamship W. A. Scholten, September 27; steamship Maas, October 11; steamship P. Caland, October 25; steamship Schiedam, November 1.

There is no direct steamship communication between New York and Amsterdam.

Thanking you for your courtesy to our government, I remain, with great respect, yours, very truly,

H. CAZAUX.

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*O. J. Bottemanne to S. F. Baird.*

BERGEN-OP-ZOOM, 7 November, 1877.

DEAR SIR: Inclosed you will receive the report of the assistant director of the zoölogical garden at Amsterdam to me about the *S. quinnat* eggs you presented to our government. I am very sorry that it is such a total failure. The chief of the department (finance), whom I hold my commission under, has taken the necessary steps already, by his colleague of the interior, to make a proper acknowledgment to the United States Commission for the truly magnificent donation.

Mr. Mather had telegraphed from New York the starting; this enabled me to prepare in time. The 23d I wired to Southampton, in order to know the quantum Mr. Mather was bringing (your letter of the 9th of October only reached me the 26th), and received an answer on the 24th. Having no time to spare to run over to Bremerhaven, I had arranged with Dr. Westerman, the managing director of the zoölogical garden, that the asst. director should go to take charge of the eggs at Bremerhaven. In the gardens, I may say, all were in high glee. Mr. Noord-hoch Hegt telegraphed the time of his arrival, and so the whole board of directors was present in the breeding-house, to be driven off in less than no time as soon as the first box was opened, by the terrible smell; it was really a pity. As the report is pretty exhaustive, I will say nothing more here.

When going to Amsterdam, to make my arrangements for the eggs, I touched at Leiden, and got from Professor Buys (secretary of the board



of commissioners of the sea fisheries) all the yearly reports since 1870, which I forwarded to your address in Washington by bookpost in the latter days of October last, and I will take care to send the same every year as soon as published, which is commonly not before September; rather late. At the same time I forwarded two pamphlets of Mr. de Bont, one French, one Dutch. This gentleman, who belongs to the board of directors of the zoölogical garden, is amateur pisciculturist, has always superintended the fish-breeding establishment, and is lately very successful.

In our rivers we find in the fall, September and November, the salmon almost and entirely ready to spawn, but at the same time there are in September commonly a few, later on more, and now nothing else but heavy salmon, averaging about 25 pounds, which we call "winter salmon;" in England, I believe, "fresh run salmon." The ovary in those salmon are so minute that they were formerly entirely overlooked, and so this salmon was declared to be sterile. When I investigated our rivers in 1869 and 1870 with Mr. Pollen, we found this to be not so. We gathered the roe and milt for a period of more than a year, and so we got the successive development from the winter up to the spawning salmon; and this proved that the winter salmon was not sterile. We proved also that the *Salmo hamatus* was nothing else but the male *Salmo salar* in breeding time, and that the gray and dark colored red-spotted one was nothing but the female in the same condition. After spawning she became just as silvery as a spring salmon and the male lost his hook before he died. Up till now it is still an open question "what makes the winter salmon come into the river the same time the others come into spawn?" She is not ready to do so before next fall, and in the spring there is caught once in a while a salmon with worms hanging out of his head, emaciated, and in terribly poor condition: a fish that in good condition would weigh 25 pounds does not weigh more than 11 or 12 pounds; the body, always broader than the gills, is so much shrunk that the gills protrude considerably. Almost invariably are those that have been so-called winter salmon, drifting seaward, which is proven by the fact that the first caught are always high up in the river and later on in the tideway, but we never catch many, and in later years but few. Now, as to what winter salmon is, I gave the following explanation:

The salmon is bound to come into the rivers for reproduction, but if they all came at the same time, viz, in the fall, being all in nearly the same state of development, they would altogether reach to nearly the same height in the river and be compelled to spawn there and then. Of course there was not place enough for the whole lot, so the one would root up the nest of the other, and it would be a wonder if the whole progeny was not destroyed. No, says mother nature, not so. You go so much earlier in the river; and you so much; that leaves you time to go so much farther, and in this way you will all find a good place to spawn, and so you will find spawning-beds all along the Rhine up to

Schaffhausen. Now this looked to me a very good solution of the question, but what in the case? At Basel we find just as well and at the same time the salmon in prime spawning condition and the winter salmon; this upsets my whole theory, unless I am able to prove that the salmon caught in spawning condition at Basel has been a round year in the river, which is not probable and which I don't believe, as being in too good condition for that. If you have an opinion about this I will be very glad to know it.

Oyster culture is taking here such a swing that it is becoming a national interest. The board has proposed to exhibit next year in Paris. As soon as the decision is known I will let you know. I think to go there anyhow. Whenever you come across, either to France or England, try to stop here too. When arriving in England, by leaving London via Queensborough-Flushing for the Continent, it takes about eight hours to cross the North Sea, and from Flushing one hour per rail to get here, and from here you are within 25 minutes on the route Amsterdam, Brussels, or Paris.

Offering you my sincere thanks for your great liberality in sending the eggs,

I remain, dear sir, yours respectfully,

C. J. BOTTEMANNE, M. D.,  
*Superintendent of Fisheries, Netherlands.*

Prof. SPENCER F. BAIRD,

*United States Commissioner Fish and Fisheries,  
Washington, D. C.*

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*Report on the salmon eggs sent by the United States Government to the Netherlands.\**

On the 24th October, Mr. Bottemanne, superintendent of fisheries in the Netherlands, wired to us that the steamer Mosel, with destination for Bremerhaven, has arrived at Southampton, and that Mr. Fred Mather had under his care four crates, with one hundred thousand eggs.

At the same time Mr. Bottemanne sent us a letter to Mr. Fred Mather, to authorize the undersigned to receive the above salmon eggs.

Immediately we made here all preparations to place the eggs on arrival, and I went to Bremerhaven to receive them. I waited there for the steamer bringing down the passengers from the Mosel, and the 26th October, about eleven o'clock in the forenoon, I met Mr. Mather and received the four crates destined for the Netherlands. I found there Messrs. Dr. Haack, director of the Imperial German Institution at Hünningen; Dr. Finch, director of the museum in Bremen; Mr. Schiever, superintendent of the breeding station at Hameln. They all came for the same purpose. We agreed to move the crates unopened,

\* Made by the Koninklijk Zoölogisch Genootschap Natura Artis Magistra, Amsterdam.

and, not to lose a moment, to start immediately. We had them landed and brought to the railway station at Geestemunde.

While waiting there for the custom-house officers and the starting of the train, we perceived that a milky stuff of a nasty smell was running out of the crates. We took the precaution to buy a hundred weight of ice to keep them cool, but it proved useless.

On arriving at Bremen, we agreed, by general consult, and as there was some time left before any of us could start for our different destinations, to open one of the crates and the interior boxes. We did so at the station, and found the first crate for the Netherlands all spoiled, except in a corner where there were a few eggs in apparently good condition. All the interior, however, was heated up to about 70° or 80° Fah. There were a few *eclosions* with some of the fish still alive. The whole, however, gave the impression that the enterprise had failed, the fault being the packing, which, perhaps quite sufficient for a short journey of a few days, was not adequate to a transport of three or four weeks.

As the only direct train to go to Amsterdam started at one o'clock at night, I resolved to let my four crates quiet and proceed with them immediately in order not to lose 24 hours, as I could reach Amsterdam next morning. Mr. Schiever did the same and left the same night to his destination close to Hanover. Dr. Haack, who had to go further, resolved to remain in Bremen for the night and we proceeded together to a hotel, where he opened his crates. The contents proved to be in much the same condition as those of the crate opened at the railway station, the heat of the boxes' interior being 80° Fah. The best eggs were taken out of the box and put separate, and it took about four hours to do one crate.

It seems that Mr. Fred Mather had received orders to leave the salmon eggs quiet and not open them at all, as the gentleman who sent them off from California expected they would arrive safe in Europe. It is to be regretted that this was the case. Mr. Mather had opened one case in New York, and took the trouble to bring over the contents in a case of his own construction. The result was truly magnificent—out of 25,000 eggs, shipped in New York, only about 400 were lost. Through the arrangement with slides, the eggs lay in single layers and could be taken out very easily and cleaned, there being some space left at the top and the bottom. Ice could be brought close to the eggs without touching them, and the mean temperature was kept without much trouble at from 41° to 45° Fah. As I have said, the success was wonderful and the arrangement was perfect, without incurring much extra cost. As these eggs belonged to the lot for Hünningen, Director Haack had the means of putting the eggs saved from the crates in a few trays, which were empty in the above named box. What will be the result of these I cannot say here, but I have no doubt Director Haack will report on them later.

With my four crates I proceeded further to Amsterdam where I arrived 27th October, just 24 hours after receiving them in Bremerhaven.

What I expected proved true; the contents were all spoiled through heat generated in the interior. The thin pieces of white cloth where the eggs lay between were so rotten that they could not be taken up, but broke on being touched. A few of the eggs in some of the corners were still in what seemed a sound condition; the great mass was a white rotten mess with a very offensive smell. We tried to save the best and let them cool off slowly and put them afterward in water. Some *eclosions* followed, even at the moment the eggs were uncovered, but most of the apparently good eggs burst on being touched; a few hundred only came in the water, but those were all dead next day, except two or three *eclosions* which died also shortly afterwards.

It is very much to be regretted that this most liberal trial of the United States Government to enrich our European rivers with some of the valuable products of their waters has this time failed. For many reasons it is to be hoped that the Government will repeat this trial once more next year, and that they may have occasion to make use of this intelligent case of Mr. Fred Mathers. I have not the least doubt that if he can make use of the boxes with slides, as used by him this time for a small number of eggs trusted to his care, success must follow for any number, and a great boon will be bestowed on Europe for the introduction of a new population on many of its rivers.

Amsterdam, 28th October, 1877.

J. NOORDHOCH HEGT,  
*Adj. Director of the Royal Zoological Society.*

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*The Minister of the Netherlands to S. F. Baird.*

NETHERLANDS LEGATION,  
*Washington, January 28, 1878.*

SIR: I have the honor to transmit to you the thanks of the Government of the Netherlands for the valuable gift of 100,000 eggs of the California salmon, made last year by you to Mr. Bottemanne, commissioner of fisheries on the Scheldt and the waters of Iceland, and to express the hope that, though the hatching of these eggs in Holland has not succeeded, through various causes relating, as it is believed, to the packing and handling of this collection on the sea voyage, this circumstance may not prevent you from having the experiment made again this year under more favorable auspices.

I have the honor to be, sir, your obedient servant,

VON PESTEL,  
*Minister Resident of the Netherlands.*

Prof. SPENCER F. BAIRD,  
*Commissioner Fish and Fisheries,  
Smithsonian Institution, Washington.*

*C. J. Bottemanne to S. F. Baird.*

BERGEN-OP-ZOOM, *September 4, 1878.*

Prof. SPENCER F. BAIRD,  
*Washington, D. C., U. S. A. :*

DEAR SIR: Your favor came to hand in due time, and beg to inform you that the sailing days of the Rotterdam steamers where the eggs may go by are, September 28, Schiedam; October 19, Scholten; November 9, Caland. Between each of those is a smaller steamer, but neither of those have a proper ice-house, so they are of no use.

The captains of the Scholten and Caland I'll give instructions to before they leave. I missed the captain of the Schiedam at Rotterdam, but I'll write to him. I have not seen the accommodation on board the Schiedam, but the directors say she has the best of the three; still the place on board the other two is in my opinion well suited, too.

The captains will be instructed that in case you give them instructions, they have to obey yours punctually without taking any regard of mine.

In case neither of those dates of departure suit, and there is a steamer for Bremerhaven leaving at better time, having proper accommodation for the eggs, you are free to ship thereby on my account. In this case it will be necessary that you provide them with instructions. If you can manage to ship by the Rotterdam line I think we have better chance of success, as the captains of those steamers, if on no other account, will take an interest in the affair on my account. The directors, too, are interested, so it seems, as they are willing to deliver the eggs at Rotterdam free of cost. One of the directors, Mr. Plate, is in New York now; a very nice gentleman he is.

I am convinced that the whole trouble of last year was nothing else but that the eggs have not been kept cool enough and so come out too soon.

If you can do me the favor please advise them a couple of days before the departure of the steamer where the eggs are to go by, as it will give me a chance to await the arrival of the ships in port.

The New York address of the company is Funch, Edye & Co., 27 South William street.

Oyster culture is quite a success this year. The catch of spat on the tiles and shells is very plentiful; the season for it is ended just now. It is really worth the while seeing, and whenever you come to this side of the water be sure not to miss it. Of course as long as I am here, I am at your disposal.

With kind regards, I remain, dear sir, your obedient servant,

C. J. BOTTEMANNE,  
*Superintendent of Fisheries.*

*C. J. Bottemanne to S. F. Baird.*

BERGEN-OP-ZOOM, *October 30, 1878.*

DEAR SIR: October 20 I dispatched a letter to Southampton, addressed to Mr. Mather, care of the agents of the Bremen Lloyd steamer Oder, begging to wire me his arrival there. For what reason I don't know, but I did not get a message. As you know in country places, newspapers are behind, and so I knew only the 23d the Oder arrived the day before in England. Immediately I wired to Amsterdam, not being able to go myself, and Mr. N. Hegt, the same gentleman who went for the eggs last year, started in the afternoon for Bremen, but failed to meet Mr. Mather. He got the eggs and started with them with the first train, and arrived in Amsterdam at noon October 26, where I met him in the Zoo, and unpacked the eggs. They looked very healthy.

The number in the three boxes we made 85,000, out of which we picked that day and the next morning, 3,000 bad ones, and so we had Sunday morning 82,000 on the trays, splendid looking. Towards evening, when I had to leave for home, I looked them over and found about 70 bad ones more. I did not hear since from Amsterdam, but if anything was wrong they would have written or telegraphed, so I conclude all is going right.

As things stand now we may consider the transport as a splendid success, and I am very much obliged for your kindness and the trouble taken. Of course in due time you will receive an official acknowledgment.

Mr. Hegt not meeting Mr. Mather, leaves me in the dark about the costs, and not having any address of Mr. Mather in Germany I am obliged to address you about this. Please let me know at your earliest convenience and I'll remit by post-office order.

I remain, dear sir, yours, very truly,

C. J. BOTTEMANNE,  
*Superintendent of Fisheries.*

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*C. J. Bottemanne to S. F. Baird.*

BERGEN-OP-ZOOM, *27 Janvier, 1879.*

DEAR SIR: Your favor of November 12, 1878, duly received. I am sorry I had to delay the answer so long, but different reasons prompted me thereto.

On the arrival of the eggs, which I found to be irregular in size, their temperature was 8°, the water 12° Celsius; slowly we rose the temperature of the eggs up to the water.

They came out very irregular, the first about the middle of November and the last had not absorbed their sack a week ago.

In the first time we lost many by smothering, not being able to get

their head out of the shell. When the head came first it was all right, but if the sack burst through the little fellow seemed to have not power enough to clear the shell. The first impression was the shell was hardened somehow so they did not open far enough to admit an easy exit, but afterwards I felt inclined to believe it was weakness of the fry caused by the comparatively high temperature of the water, the weather being very mild at the time.

The eggs that came out later, when the temperature of the water had gone down considerable, we had less trouble with, till it gradually left off entirely. After all were out, the loss in fish became small, going down to ten and less per day. By sharp watching many were saved by helping them out of the shell when this burst.

I had a good deal hunting round to find a suitable place to deposit the fry. December 26, I fixed the place for the first lot of 10,000. January 4, when I came with them, the river had only risen about 15 feet; still the place held good and the water was pretty clear; had gone down already about 3 feet.

The transport took place in tin cans of one-half meter diameter and about one meter high. In the middle of the slanting top is a large round hole fitted with an inverted cover. The bottom of this cover and the slanting top of the can are perforated with small holes. In the top are fastened three tubes, 1 inch diameter, reaching about half way down the can. In one of them, reaching down farther and by netting preventing the fry of getting in, is a tin pump screwed in. Once in a while this pump is applied; the water runs in the middle cover and on the top of the can, is prevented from running off by the sides of the can being run up as high as the cover, and so the water runs through the little openings back in the can, which is only filled half with water and is aerated in this style.

In the front of the can is, a little under half the height, a top-screw; this serves to change the temperature of the water in the can, if necessary. The water out of the river is put on the top, where it leaks through, while at the same time the water in the tin can runs off by taking the screw out.

The 10,000 fish were put in five cans at 6 a. m., and we had them in the river in a shoal, gravelly place at 1 p. m., with the loss of not a single one. Temperature of the cans  $4\frac{1}{2}^{\circ}$ , river  $6^{\circ}$  Celsius. January 11, 20,000 made the same trip in 6 cans under a sharp frost. The cans were covered with straw and a basket and had hot-water stoves between them in the cars; and by transporting them to the river, temperature  $1\frac{1}{2}^{\circ}$ , river  $1\frac{1}{2}^{\circ}$  Cels. Had to chop a hole in the ice to get the fry in. Loss, a dozen. January 18, about 20,000 went the same way, also in 6 cans; the weather thawing, no stoves used; river full of floating ice; temperature cans and river alike,  $1\frac{1}{2}^{\circ}$ ; loss a couple. River gone down considerable—about 5 feet. The place of deposit of these 50,000 was in the river Maas, opposite the city of Venlo, in Limburg, Netherlands,

near the railway bridge. After the first lot was put in, they have been noticed many days.

I selected that river because salmon is almost extinct and very bad for seining, having a clear gravel bottom, with very shoal water almost the year round, only in open winter or the spring a sudden rise two or three, and is even then not half as muddy as the Rhine.

In Gelderland, near Apeldoorn, I found a splendid brook with a fall at the end of three or four meters. No mills on, nor fish in it, only some sticklebacks, and teeming with food.

A few ponds were dug in the lower ground aside of the brook, which were fed by a screen and pipe through the dike. On the 7th of January, 5,600 were put in the ponds; sharp frost; northeast gale; two and one-half hours by rail, one-half by cart. In the cart only with a couple of hot-water stoves with them. Loss, ten in the two cans; pumps frozen. The fish cannot get away. There is plenty of pure spring-water and plenty of food. I put them there to see how they will thrive in captivity. In the Zoö at Amsterdam are left now 1,000 to be kept there and fed, and 4,000 which I intended to place in the ponds of the Loo, near Apeldoorn, the King's summer residence and his favorite place. He is principally there. The fry would have been put in long since, but first his marriage, and now the death of our very much lamented Prince Henri, prevented me to ask his permission.

You see thus we have not been doing so bad after all; out of the sound eggs packed out (82,000 we put on the trays) I have got about 62,000 fry deposited. Of *unimpregnated* eggs we found only a *couple*; of twin fish and crooked-backs about 300, and a few with water bellies. Size of the fry 26-30 days after birth, 4 and 4½ centimeters, quite a lot of them.

I suppose it is settled now that eels are oviparous and not viviparous. Can you give me anything about Professor Packard finding the spermatozoa? Was the eel caught in fresh or salt water? What success you have got with your cod-fish hatching? Somebody has told me the *S. quinnat* does not go to sea, but stays always in the rivers. What is the temperature of the water on the breeding places in McCloud River, California?

Did Mr. Livingston Stone find out something about the so-called *winter salmon* I wrote about to you last year?

The American oyster is taking in England so much that our merchants had to come down in price, although our oyster is much superior to the American; ours sell for £4 or £5 sterling per 1,000.

I am afraid a great many will have been killed by the frost we have had. Thermometer now at 0 since yesterday. Barometer stationary at 775, noon. From yesterday has slowly risen. Wind light, east; expect more frost yet.

If the English demand for American oysters keeps up, you had better look out, otherwise you'll be out before long. The French is a bad, poor



thing, and the Portuguese is no oyster at all. I prefer our mussel to either of them.

I hope you will have this in hand before the meeting in February of the Fishcultural Society.

With kind regards, yours truly,

C. J. BOTTEMANNE,  
Superintendent of Fisheries.

*Official report on California salmon bred in the zoölogical gardens at Amsterdam for the Netherlands Government.*

## EGGS LOST.

Date.	Temperature of water.	Quantity.	Date.	Temperature of water.	Quantity.
1878.			1878.		
October 26	On arrival	3,000	November 13	Celsius 9°	600
28	Celsius 12°	428	14	9	496
29	12	463	15	9	496
30	11½	520	16	9	390
31	11	1,850	17	9	420
November 1	11½	985	18	9	380
2	11½	672	19	9	300
3	11	820	20	0	370
4	11	800	21	8	350
5	11	1,100	22	8	170
6	10½	1,300	23	8	250
7	10½	1,450	24	8	87
8	10	1,480	25	8	280
9	10	1,006	26	8	126
10	10	840			
11	9½	620			23,497
12	9	610			

## FISH LOST.

Date.	Temperature of water.	Quantity.	Date.	Temperature of water.	Quantity.
1878.			1878.		
November 27	Celsius 8°	113	December 25	Celsius 4½°	8
28	8	40	26	4½	5
29	8	47	27	4½	8
30	8	45	28	4½	7
December 1	7½	10	29	4½	10
2	7½	55	30	5	38
3	7½	75	31	5	31
4	7½	51	1879.		
5	7½	24	January 1		
6	7½	24	2	5	24
7	7½	45	3	5	14
8	7	47	4	5	24
9	7	14	5	5	20
10	7	51	6	5½	17
11	7	23	7	5	16
12	6½	14	8	5	23
13	6½	11	9	4½	16
14	6	2	10	4½	23
15	6	8	11	4½	17
16	6	2	12	4	9
17	5½	8	13	4	13
18	5½	9	14	4½	7
19	5½	2	15	4	10
20	5	8	16	4	12
21	5	8	17	4	*290
22	5	8			
23	5	15			1,410
24	5	0			

\*Twins, hunchbacks, &c.

## FRY DEPOSITED.

1879—January 4. Maas, near Venlo, Limburg.....	10,000
January 8. Zwaanspring, Gelderland.....	6,000
January 11. Maas, near Venlo, Limburg.....	20,000
January 18. Maas, near Venlo, Limburg.....	20,000
	56,000

## RECAPITULATION.

Eggs received.....	85,000
Eggs lost.....	22,497
Fry lost.....	1,410
Fry deposited.....	56,000
Fry kept for the Loo.....	4,000
Fry to be kept in the Zoological Garden.....	1,093
Total.....	85,000

November 10. The first fish broke shell.

November 26. Last fish out shell.

The few fry that died between November 10 and November 26 are put in with those of November 27.

Bergenop-Zoom, January 28, 1879.

C. J. BOTTEMANNE,  
*Superintendent of Fisheries.*