

## Enclosure 1 in No. 77.

Mr. YOUL to Mr. BULLER.

MY DEAR SIR,—

Waratah House, Clapham Park, 28th April, 1873.

I propose opening the four boxes of salmon ova that have been kept in ice, on Friday next, the 2nd May, at 3 o'clock, at the office of the Wenham Lake Ice Company, 125, Strand, when I hope you will be able to be present, and to bring Dr. Featherston with you.

The eggs will have been 108 days in ice on Friday, a very much longer period than I had intended, as I have always considered 100 days as the maximum number they can be left and afterwards successfully hatched. If, however, we find any alive, and they are hatched, we may presume their companions who have gone to New Zealand will succeed.

Having been compelled to send these four boxes in a wagon from the East India Docks to the Ice Company's store, upon looking at them a few days afterwards, found from 15 to 25 per cent. had been killed by the jolting they got in the transmission. On another occasion, on calling in to look at the boxes, I found them covered with sawdust; and this would destroy some before I found it out and got it renewed. Upon opening the boxes on Friday, I fully expect to find a great many dead eggs; it will, however, be very interesting to notice the state of the moss and ova after so long a compression in contact with ice.

W. L. Buller, Esq.

Yours very truly,  
JAMES A. YOUL.

## Enclosure 2 in No. 77.

Mr. YOUL to Mr. BULLER.

MY DEAR SIR,—

Waratah House, Clapham Park, 13th May, 1873.

You will be glad to hear that the salmon was taken from the boxes on the 2nd May, and brought home by me and placed in my hatching-trough. Began hatching yesterday morning, and to-day there are about thirty young fish, and almost all the eggs have fish in them. We may hope to have good news from New Zealand should the "Oberon" have made a tolerably quick passage for a vessel of her sailing qualities.

I wish I had suggested the plan I adopted (of removing the ova from the moss by having the water cooled by ice in vessels) to the Government of New Zealand, as I feel confident that plan would have saved the lives of many thousand eggs, and have greatly facilitated the moving of so many thousands of ova from the moss.

W. L. Buller, Esq.

Yours very truly,  
JAMES A. YOUL.

P.S.—It will be curious to know when the first salmon was hatched from the "Oberon" eggs in New Zealand.

## Enclosure 3 in No. 77.

Extract from *European Mail*, 16th May, 1873.

ON 2nd May I received an invitation to witness a very interesting experiment in connection with the transmission of salmon ova to the Colonies. Some of you will remember to have read in this journal an interesting account of the despatch of several boxes of ova, per "Oberon," to Otago. It was about the middle of January last, when the weather was very cold, that Mr. Youl might be seen seated in a shed at the docks, surrounded with ice, ova, boxes, and moss, packing the ova for shipment. It is a work that requires considerable delicacy and patience in treatment, as the least concussion kills the fish. First there is a layer of moss, then the ova is spread as widely as may be over its surface. Then comes another layer of moss and more ova, and so on till the box is full, a due admixture of ice to keep down the temperature being added. Well, Mr. Youl was anxious to test the probable success of this effort by analogy, so to speak; and thus it was that he kept back four boxes, packed and treated exactly in the same way as those despatched by the "Oberon." These were taken in a wagon to the stores of the Wenham Lake Ice Company in the Strand, and two of them were deposited in the ice-box at the back of the shop and the other two in the vaults below. I am thus particular in order to show you that there would be a slight difference of temperature in regard to two of the boxes. Mr. Youl was apprehensive that the jolting which the ova had received *en route* from the docks to the ice-stores would prove fatal to a large number of them. But we must get on with the manipulation, or I shall tire you with details. Fancy you see two of the boxes inside a large ice-chest, and three or four pans of water placed on another chest, with Mr. Youl between the two. The water has been procured from a neighbouring tank, and is of course of the temperature of the day. Not so the ova. These are very cold, and Mr. Youl reasons that if they were suddenly translated from their ice-bed to water of the temperature of that before him they would die at once. In order to obviate such a calamity, he applies ice to the water in the pans until it approaches to within about eight degrees of the temperature of the oxygen which has kept life in the ova. He is nervously anxious upon this point, and having satisfied himself that all is ready, he proceeds to unscrew box No. 1. This was an anxious moment for us all. The lid was lifted, and lo! there