

1889.

NEW ZEALAND.

INTRODUCTION OF SALMON OVA

(CORRESPONDENCE RELATING TO THE).

Presented to both Houses of the General Assembly by Command of His Excellency.

The ASSISTANT SECRETARY, Marine Department, to the SECRETARY, Southland Acclimatisation Society.

(Telegram.)

Wellington, 5th September, 1888.

If Government imports a further supply of salmon ova this season, I presume your society will undertake, in conjunction with the Otago Society, to hatch them, and place them in the Aparima River.

LEWIS H. B. WILSON.

The SECRETARY, Southland Acclimatisation Society, to the Hon. the MINISTER of MARINE.

(Telegram.)

Invercargill, 7th September, 1888.

Yes; most decidedly.

R. H. BRODRICK.

The ASSISTANT SECRETARY, Marine Department, to the SECRETARY, Otago Acclimatisation Society.

(Telegram.)

Wellington, 5th September, 1888.

If Government imports a further supply of salmon ova this season, I presume your society will undertake, in conjunction with the Southland Society, to hatch them, and place them in the Aparima River.

LEWIS H. B. WILSON.

The SECRETARY, Otago Acclimatisation Society, to the ASSISTANT SECRETARY, Marine Department.

(Telegram.)

Dunedin, 6th September, 1888.

We have every facility for hatching large quantities of salmon ova, and will gladly undertake to place in Aparima River.

JAS. EDGAR.

The Hon. the MINISTER of MARINE to the AGENT-GENERAL, London.

(Telegram.)

Wellington, 6th September, 1888.

SEND salmon ova. Amount not to exceed five hundred pounds.

The MINISTER having Charge of the MARINE DEPARTMENT to the AGENT-GENERAL, London.
SIR,—

Marine Department, Wellington, 6th September, 1888.

Referring to telegram of this day's date forwarded to you, a copy of which is enclosed, I have the honour to inform you that a sum of £500 has been voted for the introduction of salmon, and I have therefore to request that you will take the necessary steps to procure and forward to the colony a supply of Scotch salmon ova, the cost of which, landed in New Zealand, is not to exceed the sum voted. The ova will be hatched out by the Otago and Southland Acclimatisation Societies, so that it would be desirable, if possible, that the ova should be sent out by a steamer that will deliver her cargo at Port Chalmers.

I have caused sixteen empty ova-boxes to be shipped by the s.s. "Ruapehu," consigned to you, for which I enclose bill of lading. It was not considered advisable to return the chests, as they had been considerably damaged in taking them out of the steamers they had come in.

I have, &c.,

GEO. FISHER,

(For Minister having Charge of the Marine Department).

The Agent-General for New Zealand, 7, Westminster Chambers, London, S.W.

The AGENT-GENERAL to the Hon. the MINISTER of MARINE.

SIR,— 7, Westminster Chambers, London, S.W., 8th September, 1888.

I have received your telegram of the 6th instant, instructing me to send out a fresh supply of salmon ova this season provided the cost does not exceed £500. I will do my best to carry out your orders, but at this moment I cannot be sure of being able to do so with success, on account of the lateness of the time of year.

I have, &c.,

The Hon. the Minister of Marine, Wellington.

F. D. BELL.

The MINISTER having Charge of the MARINE DEPARTMENT to the AGENT-GENERAL, London.

SIR,— Marine Department, Wellington, 17th September, 1888.

Adverting to my letter (No. 449/57) of the 6th instant, asking you to procure and forward to the colony a supply of Scotch salmon ova, I have the honour to request that you will be good enough to forward at the same time two boxes of salmon-trout ova, which will be hatched out at the Masterton ponds.

I have, &c.,

GEO. FISHER,

(For Minister having Charge of the Marine Department).

The Agent-General for New Zealand, 7, Westminster Chambers, London, S.W.

The AGENT-GENERAL to the Hon. the MINISTER of MARINE.

SIR,— 7, Westminster Chambers, London, S.W., 12th December, 1888.

Since I last wrote to you respecting a shipment of salmon ova the necessary steps have been taken for netting the Tweed and Tay, leave for that purpose having been courteously given by the River Boards, and Sir James Maitland has been kind enough to let the ova be laid down at the Howietoun Fishery. Mr. Superintendent Donaldson, who has done such good service for us on previous occasions, has everything in readiness to start fishing next week if the weather permits and the river is in fly.

I have, &c.,

The Hon. the Minister of Marine, Wellington.

F. D. BELL.

The AGENT-GENERAL to the Hon. the MINISTER of MARINE.

SIR,— 7, Westminster Chambers, London, S.W., 29th December, 1888.

In continuation of my letter of the 12th instant (No. 1,744), I beg to say that about 150,000 salmon ova have been got up to the beginning of this week, and they will be in the proper stage of incubation at Howietoun to be sent by the s.s. "Arawa" to Dunedin on the 24th January. I hardly expect to get many more, as the rivers have not been in good condition for the fishing, and I am unwilling to make more than one shipment if it can be helped, on account of the expense of fitting up chambers on board two vessels.

I have, &c.,

The Hon. the Minister of Marine, Wellington.

F. D. BELL.

The AGENT-GENERAL to the Hon. the PREMIER.

(Telegram.)

London, 5th January, 1889.

FIVE hundred thousand salmon ova—part to Port Chalmers, "Arawa;" rest "Aorangi."

The AGENT-GENERAL to the Hon. the MINISTER of MARINE.

SIR,— 7, Westminster Chambers, London, S.W., 11th January, 1889.

Since writing to you on the 29th December (No. 1,843), I am glad to say we have had very successful fishings, and there are now altogether half a million salmon ova at Howietoun, of which 440,000 are from the Tweed and the rest from the Forth. I have not been able to avoid making two shipments, as the ova we last got will not be properly ready for the "Arawa" on the 24th instant. Needless to say that the time of fishing, and the period required for incubation, cannot be made to fit in with the departure of a particular steamer. About 200,000 are going in the "Arawa" to Port Chalmers, and the remainder will go by the "Aorangi" to Wellington on the 7th February. I telegraphed this to you on the 5th instant, so that you might arrange in good time for the transshipment of any ova at Wellington according as it may be decided to distribute them.

The space to be occupied in the "Arawa" by the first shipment is, in round numbers, 1,100 cubic feet, the cost of which at the present rate of freight would be, at £4 a ton measurement, about £110; but I have appealed to the shipping companies to charge no more than the rate we paid for the last shipments two years ago, which was £3 a ton.

The experience gained, not only in our own shipments, but in the Tasmanian one under the personal charge of Sir Thomas Brady last year, has enabled several improvements to be made, such as the omission of the third layer of ova in the trays of the Howietoun boxes and a better drainage of the ice-drip. Indeed, the insulating-cases might have been dispensed with, and the boxes placed only on shelves, thereby saving a good deal of freight, if it had not been for the danger of taking the boxes out of the cold-chamber into the temperature of the air; but it is impossible to run that risk.

There were no sea-trout ōva (*Salmo trutta*) at Howietoun, and it was too late in the season to send any from Solway Fishery with the salmon ova. Mr. Armistead's sea-trout spawned at the end of October, and the ova are now hatching out. The price would have been £1 per thousand; but I could not make a separate shipment of them, as it would have trenchd too much on the

limited amount at my disposal. Next season, however, I can arrange for a supply if you will let me know how many thousands are wanted; but please to bear in mind that the time for sea-trout will never correspond with the time of salmon ova, so that the expense of a separate shipment cannot be avoided.

In our former shipments, you will remember that a man was specially sent in charge of the cold-chamber and ova; but, with the improved methods adopted this time, I have not thought it necessary to incur that expense, and have arranged instead with the engineer of the "Arawa" to take charge for a gratuity on arrival. Particulars for the guidance of the officer (or other person) to whom the insulating-cases are to be delivered will be sent by both steamers. Please, therefore, give orders that the "Arawa" be met at Port Chalmers, so that the cases may be got out immediately on arrival.

I enclose copies of the Superintendent's reports. Mr. Donaldson especially deserves great credit for his success. You will be glad to hear that his ova were taken from such fine fish, two of them weighing 24lb. and 22lb. We have also been much indebted to Mr. Guy, secretary at Howietoun, who has been most careful and attentive in all our shipments.

I wished to send some Irish ova, but on applying to Sir Thomas Brady he could not let me have any eyed ova, and I would not send any that were not eyed.

Once more I have to record the invaluable help given to us by Sir James Maitland. Although he had no room at Howietoun this season for anything like half a million ova, he took them all in when the Tweed fishing turned out so successfully; and I have assured him how much the colony and the Government will appreciate his kindness.

I have, &c.,

The Hon. the Minister of Marine, Wellington.

F. D. BELL.

Enclosures.

SIR FRANCIS,—

Peebles, 20th December, 1888.

I am instructed by Mr. Superintendent Donaldson to inform you that he came here last night to commence fishing for ova. We commenced netting at 1 a.m. and continued till 11 a.m. to-day. We secured four female and five male ripe fish, which were spawned this forenoon, and the ova sent away at 3 p.m. for Howietoun. Being the first consignment, Mr. Donaldson has gone with it to Edinburgh to see it transhipped into Stirling train, returning here to-night. We are to continue fishing so long as the river is suitable. Mr. Donaldson received your telegram when preparing to leave for Edinburgh.

I am, &c.,

Sir Francis Dillon Bell.

ROBERT ROBERTSON, Inspector.

SIR FRANCIS,—

Melrose, 23rd December, 1888.

I beg to inform you that I sent salmon ova from Peebles to Howietoun on the 20th, 21st, and 22nd instant; total quantity, about eighty thousand. Some of the females were upwards of 20lb. weight; a few males much heavier. I commenced netting early on the morning of the 20th, and stopped on the afternoon of the 22nd. As the river was in good order, I kept the hired men, assisted by some of my own men, almost constantly fishing. Ripe fish caught during night were put into a large box in the river and stripped during the forenoon. Ova sent away each day in time to arrive at Howietoun same night. As the river is now too small until another flood for successful fishing at Peebles, I go to Kelso on Monday to arrange commencing there on Tuesday, but will return to Peebles when the river becomes flooded.

I am, &c.,

Sir Francis Dillon Bell.

D. C. DONALDSON, Superintendent.

DEAR SIR,—

River Forth Salmon Fisheries' Office, Stirling, 26th December, 1888.

The salmon-spawning season being now virtually over in this district I beg to enclose account for outlays incurred and paid by me when engaged in fishing for and collecting salmon ova for your Government, and I will thank you kindly to remit me the amount as per account. Although not so successful as I would have wished, yet, taking into account the lateness of the season, I think we did fairly well, some sixty thousand fine healthy eggs having been obtained.

Yours respectfully,

Sir Francis Bell.

JOSEPH NAPIER, Superintendent.

SIR,—

Melrose, 30th December, 1888.

As I have been wholly intrusted with the ova-fishing on the Tweed this season, I think it right to let you know how I am getting on. On the 23rd instant I wrote the Agent-General informing him what I had done up to the 22nd.

On Monday, the 24th, I went to Kelso to arrange for fishing there on the following day. I returned to Melrose at night. It was then raining, and a telegram waiting me from my inspector at Peebles stating that the river began rising there early on Monday morning, and the men commenced fishing, and had fish for me to spawn. I wired that I would be up with the last train. Meanwhile I wired countermanding fishing at Kelso, and went to Peebles. Kept the men fishing till Wednesday forenoon, but did not get ripe fish after Tuesday (25th) afternoon; and that evening I sent nearly eighty thousand ova to Howietoun from fish caught on Monday and Tuesday. On Wednesday the river became too small for successful fishing at Peebles. I left there and went next day to Kelso to arrange for fishing there. The river was too large for successful fishing at Kelso—to be successful I require a flood at Peebles; a small water at Kelso. On Saturday, the 29th, I went to Kelso and secured nearly thirty thousand. In my note to the Agent-General I estimated the number of ova up to the 22nd December at eighty thousand; but the estimated number at

Howietoun was about ninety thousand, which I have no doubt is correct; but I have no desire to overestimate my work.

I have thus sent to Howietoun about 200,000. I have spawned some very fine heavy fish—one at Peebles, 24lb.; another 22lb. (females). I have already more ova than the season Mr. Eden was here. I have arranged fishing at Kelso on Monday, the 31st instant, and expect it will be the best day of the season. That part of the river where I am to fish is in splendid order, and a good show of fish.

I am, &c.,

D. C. DONALDSON, Superintendent.

W. Kennaway, Esq., 7, Westminster Chambers, S.W.

DEAR SIR,—

Melrose, 2nd January, 1889.

I am in receipt of your letter of the 31st ultimo, and have pleasure in informing you that I had a very successful day at the fishing on Monday. Seventy-five thousand ova were procured and sent the same night to Howietoun, the greatest number ever taken from the Tweed in one day. I have arranged to have a day's fishing at Kelso, the same place, to-morrow.

Yours respectfully,

D. C. DONALDSON, Superintendent.

W. Kennaway, Esq., 7, Westminster Chambers, S.W.

SIR,—

Melrose, 6th January, 1889.

I am favoured with your note of the 4th instant, and have again to report successful fishing at Kelso. On the 3rd instant I sent about 100,000 ova to Howietoun, and on the 5th instant fully that number. I estimate that I have sent about 500,000 ova to Howietoun since the 20th ultimo. For several reasons I must now stop fishing, and will send you soon a detailed account of my outlay.

I am, &c.,

D. C. DONALDSON, Superintendent.

W. Kennaway, Esq.

DEAR SIR,—

Howietoun Fishery, Stirling, 25th December, 1888.

We have collected about 150,000 salmon ova up to Saturday, 22nd instant, all of which will be in the proper stage of incubation to be sent by the "Arawa," starting from London on the 24th January next. We will accordingly make arrangements for the ova being sent by that steamer. I suppose all the steamers you gave me a note of start from Albert Docks.

The packing-box, as by your letter of the 22nd instant you are sending for approval, has not yet reached us. On its arrival we will communicate to you our opinion on the alteration made thereon.

As requested by your letter to me of the 7th instant, I have to inform you that a payment of £20 to account of expenses will be sufficient.

Yours faithfully,

Walter Kennaway, Esq.

JAMES R. GUY, Secretary.

DEAR SIR,—

Howietoun Fishery, Stirling, 31st December, 1888.

The box has arrived. Unfortunately it had been forwarded by the wrong route. Please note that the others are sent *via* London and North Western and Caledonian Railways. The tinned iron on the bottom is an improvement. The boxes have been carelessly stored—that, is the sawdust had not been removed before storing—the consequence being that the one sent (No. 67) is in bad condition. The trays are to be cut down to two layers; and the whole of the boxes should have been here ere now, as the time is very short. Ten boxes, with from 150,000 to 200,000 eggs, will be ready for the first consignment, and about, at least, twelve boxes for the second steamer. Cutting-trays will reduce the holding-capacity of the boxes from eighteen to sixteen layers of, say, 1,150 eggs per layer. Please send the ten boxes for the next consignment, *via* London and North Western and Caledonian Railways, at once.

Yours faithfully,

Walter Kennaway, Esq.

JAMES R. GUY, Secretary.

DEAR SIR,—

Howietoun Fishery, Stirling, 4th January, 1889.

I beg to inform you that we have received half a million salmon ova up to date, made up thus: 440,000 from the Tweed, and 60,000 from the Forth.

Yours faithfully,

Walter Kennaway, Esq.

JAMES R. GUY, Secretary.

The AGENT-GENERAL to the Hon. the MINISTER of MARINE.

SIR,—

7, Westminster Chambers, London, S.W., 24th January, 1889.

I am glad to inform you that the total number of salmon ova going to you this season is not far from 700,000, being 200,000 more than I had led you to expect.

When I last wrote (11th January, No. 16) I thought I should be able to send 200,000 by the "Arawa," but some of them failed from insufficiency of milt, and I can only send 150,000 now. They are in eight Howietoun boxes, which were safely put on board yesterday. I enclose a statement of the contents of each box. I hope to send at least twenty-eight boxes more by the "Aorangi" in a fortnight, with more than half a million ova.

As the cool-chamber in the "Arawa" had to be placed near the refrigerating-engine, great care was taken to guard, by efficient insulation, against risk from the high temperature of the engine-room, as well as of the main deck and top sides in the tropics; and a cold-air blast, fitted with a regulating-valve, was taken from the main cold-air delivery which supplied the provision-chamber, so as to keep the ova-chamber throughout the voyage at a temperature of 33° to 35° Fahr.

The ship's engineers, into whose charge the ova-chamber has been given, will enter in a journal the temperature of the 'tween decks, the chamber, the insulating-case, and the main deck, as well as that of the sea, at 8 a.m., noon, and 4 p.m. daily. I enclose copies of their instructions, and of a memorandum which they are to deliver on arrival to the officer whom you will have appointed to meet the ship. They are to receive gratuities of £10 and £5 respectively, and I have to ask that instructions may be given to your officer to pay the gratuities accordingly.

Both the shipping companies have very handsomely responded to my request not to charge more than £3 per ton for the space in the "Arawa" and "Aorangi."

I referred in my last letter to the saving that would be made in freight and other expenses if ova-boxes could be sent on shelves in the cool-chamber without insulating-cases. Some of the ova taken out by Sir Thomas Brady last year were at the last moment put upon rough shelves to take their chance, and turned out well. Freight being by far the greatest item in the total cost of a shipment, I wished to ascertain by careful experiment whether the method of shelves could be safely adopted in future, and I shall therefore send some of the ova by the "Aorangi" in that way. I do not think there is much danger during the voyage, but great care will have to be taken on the ship's arrival. So long as the Howietoun boxes are in an insulating-case, this case can be taken out of the ship bodily, and no harm can happen to the ova, because the temperature of the case itself can be kept at the temperature that is wanted; but boxes placed only upon shelves would, without proper precaution, be suddenly exposed to the high temperature of the air. What I would therefore ask you to do is to give orders for some planks to be ready for a few rough insulating-cases to be made on the spot, in which to put the boxes that were on shelves during their transport to the ponds, taking care to leave a good margin in which to pack pulverised ice round the boxes. The receiving hatcheries would then note with care any difference between the ova sent to them that way and ova sent to them in the regular insulating-cases taken out of the ship.

Please to give orders for the Howietoun boxes to be returned to me; but it will not be worth while sending back the insulating-cases. I should be very glad for the journals kept by the engineers and the notes by the hatcheries to be sent to me as soon as they are received.

I have, &c.,

F. D. BELL.

The Hon. the Minister of Marine, Wellington.

SALMON OVA FROM FORTH DISTRICT, TWEED COMMISSIONERS.

Packed in Box	Dec. 13.	Dec. 15.	Dec. 17.	Dec. 18.	Dec. 20.	Dec. 21.	Dec. 22.	Totals.
83	13,800	...	4,750	...	...	...	...	18,550
84	1,150	18,000	...	...	...	...	...	19,150
85	...	...	...	6,900	...	11,000	...	17,900
86	...	...	...	...	20,000	...	...	20,000
87	...	...	...	...	20,000	...	...	20,000
88	...	...	...	1,150	2,500	2,950	9,600	16,200
89	...	...	...	...	...	...	19,200	19,200
90	...	...	...	...	...	...	19,200	19,200
	14,950	18,000	4,750	8,050	42,500	13,950	48,000	150,200

No. 1.—INSTRUCTIONS.—SALMON-OVA REFRIGERATOR, S.S. "ARAWA."

THE cool-chamber containing the eight Howietoun boxes with salmon is built on the starboard side of No. 2 'tween decks, adjoining the after end of the refrigerating engine-room, with a cold-air trunk leading from the ship's provision-chamber. This is done so that an even low temperature may be secured—say, not lower than 33° or higher than 35°. It is necessary that this low temperature be maintained so as to prevent the waste of store ice.

It will be necessary for the attendant in charge to examine daily the ice-trays of the ova-boxes fixed in the refrigerating-case, and keep them well charged with pulverised or broken ice during the voyage. Also to fill the ice-wells encasing the ova-boxes in the same way, taking care to keep the door of the ova-chamber closed after each operation. The ice-water to be drawn off at least once a day from the well fitted with a draw-off tap, taking care to shut off the tap immediately after the water is drawn off. The time for charging the ice-trays of the ova-boxes and the wells of the case will be best determined by careful observation. It is absolutely necessary to keep the cool-chamber securely locked up, and on no account is the attendant to allow any one to interfere with his duties, or to disturb or examine any of the cases containing the ova. The temperature of the 'tween decks, outside of cool-chamber, inside of cool-chamber, and inside of case containing ova-boxes to be taken daily at 8 a.m., noon, and 4 p.m. The temperature on deck and of sea-water should also be taken at the stated times, and all duly entered in the journal under the respective headings. This journal to be handed to the Government officials on arrival in New Zealand.

Instructions relative to the Howietoun Cases containing the Ova.

After taking off the lids (the screws not intended to be reinserted during voyage), remove sawdust and the cross-bar at the top. Lift the board and replenish ice-tray as required. Take care the boxes are so placed that the waste water, if any, from ice-melting may drip out at bottom. Ice should be kept in the ice-tray until the eggs are finally unpacked, and they should on no account be disturbed during the voyage.

THOMAS JOHNSON.

No. 2.

To the engineer in charge of the salmon ova placed on board the s.s. "Arawa" by Sir Francis Bell, Agent-General for New Zealand.—You will take particular care that the cases containing the ova are fully charged with ice, and the lids securely fixed and screwed down, and placed in a cool position (not freezing) until the large ova-case has been charged with ice, the doors fixed, and landed, when you will see the eight salmon-boxes placed inside of it and securely fixed, so as to avoid accidents during transit up country. The journals you have kept during the voyage will be given up to the officials in the colony, requesting them to transmit one copy to London. The Agent-General will give instructions that you be paid, on the satisfactory completion of your work at the end of the voyage, the sum of £10, and your assistant the sum of £5.

THOMAS JOHNSON.

To the officer deputed by the Government of New Zealand to receive the salmon ova from the engineer in charge on the arrival of the s.s. "Arawa" at Otago.—On taking over the shipment of salmon ova, previous to sending the ova-boxes forward to the hatchery, it will be necessary to examine them as carefully as possible, and to take care before they are finally closed to see that the ice-trays in each box are fully charged with pulverised ice. For the purpose of transport from the ship to the hatchery, every precaution should be taken to provide an easy and safe mode of carriage. If a cart, van, or wagon is used it would be necessary to make up, on the bottom, a good bed of straw in sacks, so as to protect the ova in the cases from the evil effects of the wagon jolting; and each case should be well blocked off, to prevent any other kind of movement of the wagon. In case the ova has to be sent to any great distance from the Port of Otago, the large insulated case, well charged with ice, should be used; in which case, and before placing the ova in it, it should be got into the cart, van, or wagon, resting on the straw-bed, already named, and securely blocked off. The ova-cases when put into this case should also be well secured.

THOMAS JOHNSON.

The AGENT-GENERAL to the Hon. the MINISTER of MARINE.

SIR,—

7, Westminster Chambers, London, S.W., 8th February, 1889.

The s.s. "Aorangi" takes out the second shipment of salmon ova. Full preparations had been made for twenty-eight Howietoun boxes in the cool-chamber, as it was probable that a half million ova would be safely incubated. The actual number, however, is about 490,000, in twenty-seven boxes, and the rest of the space is made up with 27,000 Lochleven trout ova. All the ova of both kinds are in very fine condition; and Sir James Maitland was kind enough to come up from Scotland to see them safely put on board. I beg to enclose herewith a statement showing the contents of each box.

So large a shipment at one time has required especial care in the preparation of the cool-chamber. You will have seen from my last letter (24th January, No. 68), reporting the shipment by the s.s. "Arawa," that it was my intention to send some of the boxes on shelves without special insulation, but on consulting with Sir James Maitland we came to the conclusion that we had better not run the risk. There was no time to make separate insulating-cases to take in all the Howietoun boxes, and, besides, they would, together with the large additional space (thirty tons more freight), have cost more than £200. We accordingly had to devise another plan for insulating the Howietoun boxes as securely as if each set of four boxes was in a separate case. But this makes it all the more necessary that there should be no risk of sudden exposure to high temperature on arrival; and I trust you will have given the orders I asked in my last letter—for rough cases to be ready for putting together in which the boxes which are not in separate cases may at once be placed for transport to the ponds.

All the ova on board the "Aorangi" are in charge of the chief engineer and second engineer, to whom proper instructions have been given, as in the case of the "Arawa." I enclose copies of these, and of a memorandum which the engineers will hand to the officer appointed to meet the ship. The chief engineer is to receive a gratuity of £15 and the second engineer £7 10s. in consideration of the large number of boxes they have to look after on the voyage; and I have to ask that the necessary orders may be given for the payment of these gratuities accordingly.

It is very fortunate that we have been able to collect such a large number of ova this season, because a new Bill relating to the salmon fisheries of Scotland is before the Imperial Parliament, and if it is passed in the ensuing session the Fishery Board are sure to adopt extensive measures for breeding, and will want all the salmon ova they can collect, so that it will be very difficult for us to get leave to net a Scotch river for the next three or four years. I enclose a copy of the Bill.

The colony is under exceptionally great obligations to Sir James Maitland in connection with the present shipment, on account of the immense pains he has personally taken in the incubation and packing of the ova; and I do not hesitate to say that to his care and to the exertions of his officers at Howietoun Fishery, as well as to the good work of the men I employed in netting the rivers, the success of this season is entirely due. I wish also to express the fullest acknowledgments due to Messrs. Johnson and Gregson for the excellent arrangements made on board in respect of the cool-chamber, the provision of ice, and a multitude of details without which no successful shipment is ever possible.

The Hon the Minister of Marine, Wellington.

I have, &c.,

F. D. BELL.

SALMON OVA FROM TWEED COMMISSIONERS.

Packed in Box	Dec. 25.	Dec. 29.	Dec. 31.	Dec. 31.	Jan. 3.	Jan. 4.	Jan. 5.	Totals.
45	18,400	...	...	...	...	...	...	18,400
69	18,400	...	...	...	...	...	...	18,400
77	18,400	...	...	...	...	...	...	18,400
78	18,400	...	...	...	...	...	...	18,400
79	18,400	...	...	...	...	...	...	18,400
80	17,250	1,100	...	...	...	...	...	18,350
91	...	17,600	...	...	...	...	...	17,600
92	...	14,300	3,450	...	...	...	...	17,750
93	...	...	18,400	...	...	...	...	18,400
94	...	...	18,400	...	...	...	...	18,400
95	...	...	18,400	...	...	...	...	18,400
96	...	...	...	18,000	...	...	...	18,000
97	...	...	3,450	14,625	...	...	...	18,075
98	...	...	...	...	18,400	...	...	18,400
99	...	...	...	...	18,400	...	...	18,400
100	...	...	...	...	18,400	...	...	18,400
101	...	...	...	...	18,400	...	...	18,400
102	...	...	...	...	18,400	...	...	18,400
103	...	...	...	...	18,400	...	...	18,400
104	...	...	...	...	...	18,000	...	18,000
105	...	...	...	...	...	18,000	...	18,000
106	...	...	...	...	...	18,000	...	18,000
107	...	...	...	...	...	18,000	...	18,000
108	...	...	...	...	...	...	17,600	17,600
109	...	...	...	...	...	...	17,600	17,600
110	...	...	...	...	...	12,375	5,500	17,875
111	...	...	2,300	...	6,900	...	...	9,200
Totals	109,250	33,000	64,400	32,625	117,300	84,375	40,700	482,650

No. 1.—INSTRUCTIONS.—SALMON-OVA REFRIGERATOR, S.S. "AORANGI."

THE ova- or cool-chamber, containing the twenty-eight Howietoun boxes of salmon ova is built on the starboard side of No. 2 'tween decks, abreast the main hatch, with a cold-air trunk leading from the ship's provision-chamber, which is situated under the ova-chamber. This has been done to secure, by means of the regulating valve, an even temperature—say, not lower than 33° Fahr., nor higher than 35° Fahr. It is necessary that every care be taken to keep the ova-chamber at this temperature—first, to avoid accelerating the hatching process; second, to prevent the waste of store ice.

It will be necessary for the attendant in charge to examine daily the ice-trays of the ova-boxes, fixed on the refrigerating-cases, and keep them well charged with pulverised or broken ice during the voyage. Also to fill the ice-wells encasing the ova-boxes in the same way, taking care to keep the door of the ova-chamber closed after each operation. In order to keep the ova-chamber free from ice water, it will be the duty of the attendant in charge to keep the drainage-scupper clear. The time for charging the ice-trays of the ova-boxes and the wells of the case will be best determined by careful observation. It is absolutely necessary to keep the cool-chamber securely locked up; and on no account is the attendant to allow any one to interfere with his duties, or to disturb or examine any of the cases containing the ova. The temperature of the 'tween decks outside of cool-chamber, inside of cool-chamber, and inside of cases containing ova-boxes to be taken daily at 8 a.m., noon, and 4 p.m. The temperature on deck and of sea-water should also be taken at the stated times, and all duly entered in the journal under the respective headings. This journal to be handed to the Government officials on arrival in New Zealand.

Instructions relative to the Howietoun Cases containing the Ova.

After taking off the lids (the screws not intended to be reinserted during the voyage), remove sawdust and the cross-bar at the top. Lift the board and replenish ice-tray as required. Take care the boxes are so placed that the waste water, if any, from ice melting may drip out at bottom. Ice should be kept in the ice-tray until the eggs are finally unpacked, and they should on no account be disturbed during the voyage.

THOMAS JOHNSON.

No. 2.

To the engineer in charge of the salmon ova placed on board the s.s. "Aorangi" by Sir Francis Bell, Agent-General for New Zealand.—You will take particular care that the cases containing the ova are fully charged with ice, and the lids securely fixed and screwed down and placed in a cool position (not freezing) until the large ova-cases have been charged with ice, the doors fixed and landed, when you will see the twenty-eight salmon boxes placed inside of them and securely fixed, so as to avoid accidents during transit up country. The journals you have kept during the voyage will be

given up to the officials in the colony, requesting them to transmit one copy to London. The Agent-General will give instructions that you be paid, on the satisfactory completion of your work at the end of the voyage, the sum of £15, and your assistant the sum of £7 10s.

THOMAS JOHNSON.

SALMON-OVA SHIPMENT, S.S. "AORANGI."

To the officer deputed by the Government of New Zealand to receive the salmon ova from the engineer in charge on arrival of the s.s. "Aorangi" at Otago.—On taking over the shipment of salmon ova previous to forwarding it to the hatchery or hatcheries each box should be carefully examined, and before the cases are finally closed the trays of each box should be fully charged with pulverised ice. For the purpose of transport from the ship to the hatchery or hatcheries, means should be taken to provide a safe and easy mode of carriage. If a cart, van, or wagon is used it will be advisable to make up on the bottom a good bed of straw in sacks, so as to protect the ova in the cases from the evil effects of the wagon's jolting, and each case should be well blocked off to prevent any other kind of movement of the wagons. Should it be necessary to send the ova any great distance, it may be necessary to use the large portable insulated cases, well charged with ice, in which case, before placing the salmon-ova boxes in them, each large portable case should be got into the carts, vans, or wagons, resting on the straw-bed already named and securely blocked off. The ova-cases when placed inside of the cases should also be well secured. The crates which have been ordered in the colony by Sir F. D. Bell are to be used for the purpose of packing the remainder of the Howietoun ova-boxes in, and it will be necessary to have a good supply of ice on hand for use. These crates should also be placed on straw-beds lying on the bottom of the vans, and securely blocked off.

THOMAS JOHNSON.

The AGENT-GENERAL to the Hon. the COLONIAL SECRETARY.

SIR,—

7, Westminster Chambers, London, S.W., 20th March, 1889.

I beg to enclose a summary of expenses in connection with the two shipments of salmon ova.

I regret that, owing chiefly to circumstances which I could not control, the total exceeds the limit you had fixed. In any case, it would hardly have been possible to send you 640,000 ova at a cost of £500, and so large a quantity having been collected, there was, of course, the alternative of giving the excess away; but this seemed such a pity, especially in view of the Salmon Fisheries Bill, that I felt sure the Government would not desire it, and on the contrary would wish all to be sent out that were got. The "Arawa's" chamber had been prepared for a larger shipment than it was at the last moment found possible to make, owing to the progress of incubation at Howietoun; and the "Aorangi's" chamber had to be extended in consequence, while the plan of placing a number of Howietoun boxes on shelves, by which a good deal of freight and charges would have been saved, had to be given up, and new insulating-cases built.

The total is also made rather larger by the item of £11 5s. for trout ova, with which we filled up one of the insulating-cases at the last moment. Here again there was an alternative of leaving the space empty, but after the insulator had been built and freight incurred it would hardly have been right to do so.

It is always impossible to make an accurate forecast of expense in such a matter as the collection of shipment of ova; but if it is really true that young salmon have been seen in one of our rivers the Government will be glad to have got all the ova possible this season, even at the excess beyond their limit which has been incurred.

I have, &c.,

The Hon. the Colonial Secretary, Wellington.

F. D. BELL.

ANALYSIS of Expenses in connection with the Salmon-ova Shipments by the s.s. "Arawa" and "Aorangi," January and February, 1889.

	£	s.	d.	£	s.	d.
1. Collecting the ova (about 670,000)—						
On the Tweed	*53	10	8			
On the Forth	23	14	7			
					77	5 3
Expenses at Howietoun Fishery... ..					74	14 6
2. Cost of fitting steamer for ova—						
Johnson, Gregson, and Co., s.s. "Arawa"	60	8	10			
" " s.s. "Aorangi"	124	15	3			
					185	4 1
3. Freight and shipping expenses—						
Shaw, Savill, and Albion Company, s.s. "Arawa"	91	9	8			
New Zealand Shipping Company, s.s. "Aorangi"	156	3	9			
Shipping and dock charges, &c.	7	12	3			
Marine insurance	2	15	2			
					258	0 10
4. Contingencies—						
Petty disbursements					1	11 5
					£596	16 1

* This amount includes a gratuity of £23, not yet paid, to Mr. Donaldson and his men, the Board's authority having still to come.

TELEGRAM from the MINISTER having Charge of the MARINE DEPARTMENT to the AGENT-GENERAL, London (sent by post from Auckland, 25th March, 1889).

Agent-General for New Zealand, 7, Westminster Chambers, London, S.W.
SALMON ova per "Arawa" arrived in capital condition. Those by "Aorangi," which arrived here yesterday, appear to be in equally good order.

G. F. RICHARDSON,
(For Minister of Marine.)

The MINISTER having Charge of the MARINE DEPARTMENT to the AGENT-GENERAL.

SIR,—

Marine Department, Wellington, 18th April, 1889.

I have the honour to acknowledge the receipt of your letters of the 24th January and 8th February last, with reference to the shipment of salmon ova sent by the s.s. "Arawa" and "Aorangi," and have to express my thanks to you for the trouble that you have taken in the matter.

The shipment that arrived in the "Arawa" turned out remarkably well, but I am sorry to say that that in the "Aorangi" was not so good. The accompanying copies of letters from the Otago and Southland Acclimatisation Societies will give you particulars. I have not, however, as yet, received the report of the Southland society on their share of the ova *ex* "Aorangi."

I forward, under separate cover, the record-books of the temperature kept by the chief engineers of the "Arawa" and "Aorangi." The engineers have been paid the gratuities promised to them. The boxes of ova, when being transported to the hatching-houses, were placed on straw in covered vans, ice being packed all around them. It was considered advisable to do this rather than place the insulated cases in uncovered trucks, the cases being too large to go into the vans.

I have, &c.,

The Agent-General for New Zealand, London, S.W.

H. A. ATKINSON.

The CURATOR, Southland Acclimatisation Society, to the MINISTER having Charge of the MARINE DEPARTMENT.

SIR,—

Wallacetown, 18th March, 1889.

I have the honour to report for your information that on the 13th March, 1889, I received three boxes of salmon ova, *ex* "Arawa," numbered 85, 88, and 90, from Mr. Lewis H. B. Wilson, who came with the ova to Invercargill. Mr. Wilson accompanied me to the Wallacetown hatchery, which the ova reached safely the same night.

As there was a plentiful supply of ice, I filled one of the upper hatching-boxes with the same, and as soon as the temperature of the water was reduced from 50°, the normal temperature, to 44°, I placed the trays from one of the boxes containing the ova in the water below the ice for the night. Next morning, with the kind and valuable assistance of Mr. Henry Howard, I proceeded to unpack the ova, and place them in the hatching-boxes.

I may here remark that there were four trays in each division of the boxes, in place of three, as in former shipments, and only two layers of ova in each tray, instead of three, as used to be the case. Thus, there were two layers less in each box than formerly. This is a very great improvement on the old plan, as the result will show. The lowest layer of ova used always to turn out very badly, in many cases being almost a total loss; whereas now there was very little difference between the two layers, or between the upper and lower trays. I also observed that whereas formerly there was sawdust between the false and the true bottoms of the boxes, which always gave forth a strong and disagreeable odour on removal of the trays, now there is only a sheet of bright metal like tin, which can be seen through the drainage-holes. This, also, I have no doubt is an improvement.

On proceeding to open out the ova it was soon apparent that it was in a very satisfactory condition; in fact, fully equal to the best of former shipments. Of course there was a sprinkling of dead eggs in most of the trays, but there seemed fewer ringed ones than formerly, and what there were were in isolated patches; and if there was a patch in the top layer there was generally a corresponding one in the lower. I think I observed more unimpregnated eggs than usual, but the number was inappreciable.

There is one matter that is very unsatisfactory to me, and that is the great discrepancy between the number of ova reputed to be in the boxes and the number they actually contained. I only today received from Mr. Wilson a list of the number of ova supposed to be in each box. According to that list the total number of ova contained in the three boxes I received was 53,300, and as there were 38,443 good ova, the percentage would only be 72.12. It has not been our practice to count the dead ova; in fact, it was not possible in previous shipments, as part of the ova was always so matted and grown together. In this case, fortunately, on Mr. Howard opening the first tray, he remarked to me, "There are so few bad ones in this lot that I will remove them first and keep count of them," which he did, and continued to do the same with each tray he unpacked—twelve in all, or the largest half, there being one empty tray in Box 88, which fell to my lot. The total number of ova unpacked by Mr. Howard was 23,300, of which 2,936 were bad, giving a result of 87.39 per cent. of good ova. These twelve trays were taken just as they came, four being from each box. Mr. Howard is very careful and accurate, and his figures may be strictly relied on. Further, if necessary, I can demonstrate that Box 88, supposed to contain 16,200 ova, was about 2,500 short of that number. If the number of ova wanting was inconsiderable I should have taken no notice of it, but, seeing that it amounts to 15 per cent. on the contents of the three boxes, I have thought it right to draw your attention to the fact.

I think under these circumstances I am justified in assuming that the three boxes yielded at the rate of 87 per cent. of good ova, which is a great advance on previous shipments. This is as nearly as possible the same percentage as there was in the two upper layers of ova in the five boxes I unpacked *ex* "Doric," in 1887.

There is one circumstance which I think is worthy of note. In a tray which I unpacked from Box 88 there were only 559 ova in the upper layer, thirty of which were bad; and in the bottom layer there were 887 ova, only four of which were dead, the rest being absolutely free from speck or blemish. They were certainly the best layer of ova I ever had the pleasure of opening. The result is that I have placed in the hatching-boxes 38,443 fine healthy ova; and if they only hatch out as they should, judging from present appearances, I shall be quite satisfied.

I beg to enclose a detailed statement of the good ova in each box.

I have, &c.,

The Hon. the Minister of Marine,
Wellington.

ARCHD. N. CAMPBELL,
Curator, Southland Acclimatisation Society.

DETAILED STATEMENT of good Ova *ex* "Arawa"—received 13th March, 1889, at the Southland Acclimatisation Society's Wallacetown Fish Hatchery.

Layers.	Trays.								
	No. 1.	No. 1.	No. 2.	No. 2.	No. 3.	No. 3.	No. 4.	No. 4.	Total.
<i>Box 90.</i>									
Upper ...	920	815	889	912	933	815	852	960	7,096
Lower ...	860	810	795	819	799	825	832	804	6,544
	1,780	1,625	1,684	1,731	1,732	1,640	1,684	1,764	13,640
<i>Box 88.</i>									
Upper ...	746	1004	529	1008	907	949	948	Empty	6,091
Lower ...	870	980	883	911	1036	937	644	Empty	6,261
	1,616	1,984	1,412	1,919	1,943	1,886	1,592	...	12,352
<i>Box 85.</i>									
Upper ...	742	820	768	747	720	810	774	935	6,316
Lower ...	700	737	669	847	733	902	675	872	6,135
	1,442	1,557	1,437	1,594	1,453	1,712	1,449	1,807	12,451

Total number of good ova, 38,443, equal to 87.39 per cent.

The CURATOR, Otago Acclimatisation Society, to the ASSISTANT SECRETARY, Marine Department.

Sir,—

Otago Acclimatisation Society, Opoho, Dunedin, 6th April, 1889.

With reference to the first shipment of salmon ova—that per s.s. "Arawa"—I beg to report that the 12th March I took delivery of eight boxes from on board that steamer at Port Chalmers. Acting on your own instructions, who was present, I had them carefully placed in a close van, packed with plenty of straw and ice, and brought on to Dunedin that night. Next morning they were conveyed by the south express to Clinton, where I removed five boxes, containing 96,900, with a supply of ice, to the Clinton ponds, yourself taking charge of the remaining three boxes to the Wallacetown ponds, Southland. The weather was most favourable for the purpose, being bitterly cold with showers of hail. I lost no time in having them conveyed to the hatchery, and commenced unpacking in the usual way, strict attention being paid to the temperature, and I am glad to say the result was most satisfactory, the average of bad ones being barely 5 per cent., and in many of the layers they only numbered from 25 to 50. Who could wish for better results than this? They appeared to have received every attention on board the "Arawa." They are now all hatched, and are a splendid sample of salmon alevins. The packing was simply perfection itself.

The second shipment was by the s.s. "Aorangi," which arrived at Port Chalmers on the 29th March. This lot consisted of twenty-seven boxes, containing 481,650 salmon ova. The Railway Department had two close vans in readiness to convey them to their respective destinations. A number of these boxes were packed in large insulating-cases on board the steamer. These cases would have been used in which to convey the ova to the hatcheries, but the close vans would not admit them, and open trucks would have had to have been resorted to, so I deemed it best and most expeditious to place the small boxes in the close vans with a plentiful supply of ice, as on former occasions; so I procured a large quantity of good straw, and placed the boxes on good, soft beds, packing them well round with straw and blocks of ice interspersed, and then conveyed them to Dunedin for the night. After refilling the ice-trays of the boxes for the south I at once removed ten boxes, containing 170,900 ova, to Opoho. Of the remaining seventeen boxes I packed seven, containing 128,800 ova, in one van for Wallacetown, and ten, containing 181,950, in another van for Clinton, Ranger Burt, who assisted me all along, taking charge of them, and accompanying them to Clinton by the south express next morning, where his van was shunted off, and the other went on to Invercargill.

I commenced unpacking on the morning of the 30th March, and with the assistance of Mr. Carlton and others I had them all down by the evening of the 1st April. They were not in such good condition as the "Arawa" lot, and averaged about 62 per cent. good, some of the layers of ova being entirely bad, principally in the lower trays, the packing being exactly the same as in the other shipment, the bad eggs apparently having been dead a considerable length of time, as they

had grown together in mats by the action of fungus. On visiting the Clinton hatchery, I found that Ranger Burt's lot had been in a similar condition, and yielded about the same percentage.

Since the ova were placed in the hatching-boxes a good many bad ones have been removed, but that is to be expected, as no doubt some will have received unavoidable injury while unpacking, and also some will have suffered from contagion. They are just beginning to hatch, and should they do so fairly well, I estimate we will have about 320,000 young salmon.

During the unpacking I came across a box, numbered 111, containing 9,200 salmon ova, and 8,800 Lochleven trout ova. It was the last box I unpacked. Had I known of it sooner I would have communicated with you as to its destination, but, as they (Lochleven) were in an advanced state, I thought it better to place them in the hatching-boxes at once. They turned out 78 per cent. good, and are now nearly all hatched. As we have plenty of our own, you probably could arrange with this society during the season just coming for some in exchange as an equivalent.

With reference to your instructions *re* the returning of the ova-boxes, I will, as usual, see that everything is returned clean and in good order.

I have, &c.,

F. DEANS, Curator.

L. H. B. Wilson, Esq., Assistant Secretary, Marine Department, Wellington.

The MINISTER having Charge of the MARINE DEPARTMENT to the AGENT-GENERAL.

SIR,—

Marine Department, Wellington, 30th April, 1889.

Referring to my letter (No. 679/59) of the 18th instant, I have the honour to forward herewith, for your information, copy of a report by the Curator of the Southland Acclimatisation Society's fish-hatchery on the salmon ova handed to the society for hatching.

I have, &c.,

T. FERGUS,

(For Minister having Charge of the Marine Department.)

The Agent-General for New Zealand, London, S.W.

The CURATOR, Southland Acclimatisation Society, to the MINISTER having Charge of the MARINE DEPARTMENT.

SIR,—

Wallacetown, 4th April, 1889.

I have the honour to report the receipt of seven boxes of salmon ova, *ex* "Aorangi," at Invercargill Railway-station on the 30th March, 1889. I had the boxes conveyed to the Wallacetown hatchery the same evening, and after reducing the temperature of the water from 50° to 44° with ice, I placed some of the trays in the water for the night, in readiness to start unpacking next morning. I was kindly assisted at that operation by Mr. Henry Howard and the Messrs. H. and T. Brass, who have had previous experience in the work.

I regret to say that the condition of the ova, as a whole, was very inferior to that lately received by me *ex* "Arawa." It was my intention to have had all the ova counted, both good and bad, so as to be certain of the exact number received. We succeeded in doing this with the contents of the first two boxes opened, but after that it was found to be impossible, as some of the layers of ova were so matted and grown together with the moss as to render the attempt impracticable. The first boxes unpacked were Nos. 102 and 45, and they gave 81 and 80 per cent. of good ova respectively. Some of the others, however, were so bad that the average of good ova in the seven boxes was only 67 per cent. Box 99 was the worst, as it only contained 8,794 good, or about 50 per cent.

The method of packing was the same in all the boxes, and, as far as I could see, was identical with that of the previous shipment. The moss, however, did not look so bright and green as that in the "Arawa's" lot, but presented a dead and withered appearance, and in many of the trays the top of the moss was quite mouldy, or, in other words, seemed to be covered with cobwebs. The bottoms and insides of some of the boxes, on removal of the trays, I observed to be the same. A great many layers were in such a putrid and offensive condition that I should think the damage had taken place early on the voyage. There were also a large number of indented eggs, which shows they had suffered from want of moisture. I did not observe a single indented egg in the "Arawa" lot.

You will observe, on referring to the detailed statement which accompanies this, that it was the lowest layer of the bottom tray that was always the worst. Under the present mode of packing, the only explanation I can think of, and that I express with diffidence, is that, as the cleats on the bottoms of the boxes are very shallow—only about a $\frac{1}{4}$ in.—any substance getting under the boxes might check the drainage to such an extent as to cause the damage. It is a very great pity this shipment should have suffered so on the voyage, as they seem a particularly large and even lot of ova, and I am afraid that the bad effects may not yet be at an end. The ova were in a very advanced stage—a few were hatching in the moss, and quite a number are already out in the hatching-boxes.

The number of ova supposed to be in each box I received was 18,400, and judging from the boxes we were able to count, and from the quantity of ova in each layer, I think they were within a few hundred of that number. According to the list I received the total number of ova in the seven boxes was 128,800, and as the number of ova placed in the hatching-boxes was 83,098 the percentage would only be 64.51; but, as I consider the number was slightly overestimated, I think 67.45 per cent. of good ova is more correct.

I now beg leave to draw your attention to a more satisfactory subject—the progress made by the "Arawa" shipment since I last had the honour of reporting to you. These ova were unpacked on the 14th March, and on the 23rd there was a fine show of alevins in two of the boxes. On the 26th hatching was general, and by the 31st they were nearly all out and commencing to crowd together. They are certainly the best lot of imported ova I have had to do with, and some of the boxes presented an appearance which would have been very creditable had they been from New Zealand

trout ova instead of having come all the way from the Tweed. The death-rate has been so far the smallest in my experience. There are always a good many go bad during the first two days after laying down; in fact, a good many ringed and speckled ova get in by mistake, no matter how careful one may be, but since then I have only removed 1,500, which I consider very few. I have as yet detected very few deformed fish, and to-day I observed the first one with dropsy. So far it has been a pleasure to have charge of them, and I trust it may continue to be so.

I have, &c.,

ARCHD. N. CAMPBELL,

Curator, Southland Acclimatisation Society.

The Hon. the Minister of Marine, Wellington.

DETAILED STATEMENT of good Salmon-ova *ex* "Aorangi"—received 30th March, 1889, at the Southland Acclimatisation Society's Wallacetown Fish Hatchery.

Layers.	Trays.									
	No. 1.	No. 1.	No. 2.	No. 2.	No. 3.	No. 3.	No. 4.	No. 4.	Total.	
Box No. 45.										
Upper	...	1,044	1,014	1,046	1,030	1,042	987	800	900	7,863
Lower	...	954	904	1,028	992	884	857	650	200	6,469
		1,998	1,918	2,074	2,022	1,926	1,844	1,450	1,100	14,332
Box No. 93.										
Upper	...	935	934	986	940	905	935	900	645	7,180
Lower	...	895	955	947	815	430	1,016	555	65	5,677
		1,829	1,889	1,933	1,755	1,335	1,951	1,455	710	12,857
Box No. 98.										
Upper	...	803	988	871	725	711	702	651	672	6,123
Lower	...	680	923	840	735	810	615	54	76	4,733
		1,483	1,911	1,711	1,460	1,521	1,317	705	748	10,856
Box No. 99.										
Upper	...	853	730	430	708	746	509	661	322	4,959
Lower	...	716	735	374	697	727	529	19	38	3,835
		1,569	1,465	804	1,415	1,473	1,038	680	360	8,794
Box No. 101.										
Upper	...	611	778	750	846	787	701	579	667	5,709
Lower	...	913	825	710	870	799	721	36	21	4,905
		1,524	1,603	1,460	1,716	1,586	1,422	615	688	10,614
Box No. 102.										
Upper	...	975	956	1,033	874	1,010	936	960	950	7,694
Lower	...	983	945	785	739	1,000	923	450	650	6,375
		1,958	1,901	1,818	1,613	2,010	1,759	1,410	1,600	14,069
Box No. 103.										
Upper	...	866	947	850	763	941	826	872	700	6,765
Lower	...	742	710	726	665	892	741	190	145	4,811
		1,608	1,657	1,576	1,428	1,833	1,567	1,062	845	11,576

Grand total good ova, 83,098, equal to 67.45 per cent.

ARCHD. N. CAMPBELL,

Curator, Southland Acclimatisation Society.

The AGENT-GENERAL to the Hon. the MINISTER of MARINE.

SIR,—

Paris, 30th April, 1889.

I have received with great satisfaction the message you were kind enough to telegraph to catch the San Francisco mail before it left Auckland, communicating the good news of the safe arrival of the salmon ova. As every step in the collection, incubation, and shipment of ova has to be most carefully thought over, and requires the concerted action of many people, it is a great reward for the pains that were taken by every one concerned to find that our efforts have been crowned with success; and I am sincerely obliged to you for your message.

I have, &c.,

F. D. BELL.

The Hon. the Minister of Marine, Wellington.

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