

Although you must feel naturally disappointed that the arrangements you previously made were not taken advantage of, I trust that this explanation will remove from your mind any impression that the Government deliberately overlooked them, and that you will to the best of your ability forward shipments from time to time, in such a manner as you think desirable. I feel it is unnecessary for me to make any further remark, as your letter shows that you are more fully cognizant of the subject than I can pretend to be. I have only therefore to say that the Government will highly appreciate any exertions you are able to make in the desired direction.

I have, &c.,

The Agent-General for New Zealand.

JULIUS VOGEL.

No. 4.

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

SIR,—

7, Westminster Chambers, London, S.W., 18th November, 1885.

Since writing to you on the 30th October, No. 1338, I have been engaged in the endeavour to carry out your instructions about fish ova.

1. *Salmon.*

I have taken steps for getting from 50,000 to 100,000 Rhine ova from the Seewiese Fishery at Gemünden, 50,000 Rhine ova from Switzerland, 50,000 Scotch ova from the Solway Fishery, and 50,000 from the Tyne. Sir James Maitland would gladly have lent me one of his men for work in Scotch rivers if your present plan had allowed of my employing people to get ova myself; and he would have received any that I got, and incubated them at Howietoun Fishery until they were ripe for packing. I do not propose at present to get any Norwegian ova. Mr. Searle, who, as you know, was associated with the late Mr. Frank Buckland, tells me that Rhine ova are now preferred here to home-bred eggs.

It is, however, quite a mistake to suppose that ova can be got cheap in this way. The Seewiese Fishery supplies Rhine ova at the cheapest rate, 7s. per 1,000; the Swiss ova will cost about twice as much; Scotch ova will cost £1 2s or £1 3s for a large quantity, and £1 10s. for small lots. I hardly think it will be found that under your present method ova can be sent out for much less than £1 per 1,000 all round, which would mean £500 for half a million eggs. Now, apart from the moist-air chamber and freight, the actual expenditure here in 1883 was but little over £200, and I certainly should not have spent £400 in 1884 if a stop had not been put to what I was doing; while there is no doubt but I should have got at least a million ova. To use a phrase of one of the river superintendents to Mr. Farr, "a cartload of them" could have been got with the preparations that I had made. There is no need to send any one Home specially to do what is done every day at fishery establishments possessing the most perfect appliances in the world. But there are a number of things which can only be done by experts possessing special knowledge, experience, and skill, and about which you must be completely in the dark unless an expert is employed to do them, besides running a great risk of throwing money away. To take the single question of "eyed" ova, Mr. Capel, author of "Trout Culture," does not believe that eyed ova can be got out safely. But the last report of the Tasmanian Fishery Department shows that out of ten thousand eggs in that stage almost every egg hatched out right; and Mr. Saville-Kent has now advised the Salmon Commissioners to import only eyed ova into Tasmania. Mr. Farr's shipment of last March is also conclusive on the point. But all the same there is a practical difficulty where an expert is not actually employed to get and look after the ova from first to last. If you send out "eyed" ova, who can tell whether the margin of time that is left before hatching is not too small? If you send out ova that are not eyed, who can be sure when they were taken, or know anything about their impregnation? In the south of England salmon ova become eyed somewhere about forty days after spawning, and in the colder climate of Scotland perhaps fifty days; though in either case the time may vary according to the temperature of the water. They hatch out at various periods, according to the conditions in which they may be placed. They have been "forced" into life in sixty days from impregnation, and even this time has often been greatly shortened. But this is not natural, as the normal time from impregnation is from ninety to one hundred and twenty days, and it may even be prolonged to one hundred and forty days. I believe that the most constant source of failure has been that ova were sent out which had never been impregnated at all; and you will perhaps remember Mr. Farr saying, in a letter recently published at Christchurch, that, having unpacked every shipment allotted to the Canterbury Society, he could without hesitation declare that not 10 per cent. of the ova had ever been fertilized. Again, what is the proper time that ought to elapse between spawning and packing? Sir James Maitland thinks that if ova are packed on the thirtieth day 90 per cent. of them ought to arrive safely. Mr. Farr, however, has shown that ova packed thirty-nine days after fertilization, and reaching New Zealand ninety-two days after being taken from the parent fish, got out safely. Such points as these can only be settled by repeated trials, to which minute attention has been given by experts specially employed.

It is by no means certain that the method you have now decided on, of sending out boxes of ova in the freezing chambers, does not involve their exposure to a temperature in which they cannot live. Sir James Maitland thinks that if they could be packed sufficiently dry, and in trays surrounded by a thick layer of saw-dust, they might stand the cold; and he also conjectures that ova which are to be subjected to a temperature much below freezing point ought perhaps to have been in that temperature for twenty-four hours before stripping. No one can doubt that, so far as experience up to this time goes, the safest temperature is a little over freezing, or from 32° up to 35°. Mr. Armistead (of the Solway Fishery) thinks a temperature a little above freezing would