I should be much obliged if you would hold yourself in readiness to take charge of the ova on arrival here, and to proceed with them to the Bluff, and superintend their deposition in Lake Te Anau, taking with you, if necessary, an assistant from the staff of the Museum.

The necessary instructions have been sent to the railway officers at Invercargill to co-operate with you, and rendering every assistance in the transport of the ova.

I have, &c.,

James Hector, M.D., F.R.S., C.M.G., &c., &c. &c. G. S. Whitmore.

No. 30.

James Hector, Esq., M.D., to the Hon. the Colonial Secretary.

Sir,— Wellington, March 5th, 2878.

I have the honor to report that in accordance with your instructions, I have distributed the cases of whitefish ova received by the last San Francisco mail in the following manner:—

Eight boxes, each containing 50,000 ova, were received in Wellington by the s.s. Hawea on the 19th ultimo, packed in two large ice-chests, two boxes having been left in Auckland. The four ova boxes half-filled each chest, the space above being filled with broken ice and non-conducting pads. The chests stood on the fore-hatch, which is a convenient and safe position, but liable to the objection that the ova boxes have to be moved at every port, and that they might be influenced by the vibration of the steam winch.

At Lyttelton one chest was opened, and two of the small ova-boxes were left with Mr. G. S. Farr, Honorary Secretary to the Christchurch Acclimatisation Society. I should state that one of these boxes had the cover loose. The space in that chest was filled up with ice and blanketing, and at Port Chalmers it was delivered with the two remaining ova-boxes to Mr. Arthur, of the Otago Acclimatisation Society, with instructions to hand one of them to Mr. Connell, or his agent, for the Oamaru Acclimatisation Society on application.

The other chest and the spare ice, of which I got a fresh supply at Dunedin, were then transhipped to the s.s. Wanganui, the sailing of which had been delayed 24 hours, through the liberality of the owners—Messrs. Houghton & Co. Notice having been previously given, a special train was awaiting my arrival at the Bluff, but the steamer being later than was expected, there was a little delay at Invercargill, so that it was not until 1 o'clock p.m. that we reached the Elbow.

The two chests, one containing the spare ice, and the other the ova, weighing about 600lbs., were transferred to an American wagon with leather braces, and having covered them with blankets and our tent, a start was made at 2.30 p.m.

The arrangements for the conveyance of the ova from the Elbow to Lake Te Anau, upon which the success of the experiment so much depended, had been made by Captain Hankinson, with great judgment.

Travelling at about 4 miles an hour, by sundown we reached Centre Hill Station, and halted to rest two hours until the moon rose. At 11 p.m. we again started, guided by Mr. Connor, the road, and especially the fords, being difficult to find in the dark. By daylight the first ford of the Mararoa river was reached, and we again halted for an hour, and repacked the chest containing the ova, filling it up with all the ice that was left, and leaving the spare ice-chest, and so lightening the load. At 11 a.m. on the 23rd we arrived at Messrs. Hankinson's station and obtained fresh horses, and by 3 p.m. the most difficult part of the road, which is that crossing the mountains bounding the east side of the lake, had been overcome, and the journey safely accomplished. By previous arrangement, the hatching troughs had been prepared by Mr. F. Hankinson, so that with his assistance no time was lost in unpacking the ova and by 6 p.m. the operation was completed and the result of the experiment ascertained. I regret to say that this was not very satisfactory, as out of the four boxes of ova three were almost completely destroyed by the growth of white fungus, and the young fish, which had evidently been hatched out for some time, were reduced to a pulpy jelly. In the fourth box, in which there was only a slight growth of fungus, a considerable number of the ova were found in sound condition, and hatched out rapidly as they were transfered to the trough. The trough was not placed actually in the lake, but in a small stream, fed by a spring close to the shore, the temperature of the water being a little below 50° Fahr. After completing the arrangements I returned to Messrs. Hankinson's station, leaving Mr. Burton, taxidermist to the Colonial Museum, in charge of the young fish, with instructions to camp beside them, and tend them until they were sufficiently advanced to turn out in the lake.

I should state that the supply of ice proved to be quite sufficient, more than 50lbs. being left in the ice-chest at the end of the journey.

The reason of the failure of the ova was evidently defective treatment during some part of the long journey from Lake Michigan. Each box contained four layers of eggs placed between layers of gauze net and moss. The ova boxes, which were 11 inches square, by 5 inches deep, had several holes bored in both top and bottom, and the only sound ova were in the top layers, and out of reach of these holes. I may state that this was also found to be the case in one out of the two boxes left at Dunedin, the other being a total failure.

At Christchurch, also, a few sound ova were found in a similar position in one of the boxes.

I am inclined to think that the ova boxes when placed in the ice-chests should have been surrounded with ice instead of having it only on the top, as, if great care was not taken to cool the ice-chests thoroughly before the ova boxes were placed in them, it is obvious that the temperature of the ova boxes would be at first considerably raised, while at the same time the water of the melting ice would drip through the holes and saturate the contents, and so cause the ova to hatch.

The white fungus growth which was found so abundantly in most of the boxes seemed to spring from that portion of the moss in contact with the layers of dead fish, but one of the boxes was nearly free from it, except in the bottom layers, and in that the moss was green and springy. It is probable, therefore, that the decay of the moss and the growth of the fungus commenced after the hatching out and death of the young fish, and was not the cause of the failure. From the circumstance that the other boxes which